The Croonian Lectures

ON

MUSCULAR MOVEMENTS AND THEIR REPRESENTATION IN THE CENTRAL NERVOUS SYSTEM.

Delivered before the Royal College of Physicians of London

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LECTURE III.[1]

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MR. PRESIDENT AND GENTLEMEN,—I have not much to add about the muscles which are usually given as flexors and extensors, adductors, and rotators of the head, except with regard to the sterno-mastoids which are the chief flexors of the head and they can be seen strongly acting when a person is told to raise his head from the pillow when lying on his back, and when this is done powerfully the recti abdominis also contract to fix the sternum, as was pointed out by Winslow.[2] These two sets of muscles are associated together in certain rhythmical spasmodic contractions, as in a case which was under my care lately where a man had clonic spasm of both recti abdominis and also in both sterno-mastoids. In addition to the sterno-mastoids, the platysma myoides, the omohyoids, and the other depressors of the hyoid bone act. (I might add in passing that the depressors of the hyoid bone and the muscles between the hyoid bone and the lower jaw are well brought out when the lower jaw is opened against resistance.) With reference to extension of the head the only muscles which can be felt to contract are the clavicular part of the trapezii, the complexi splenii capitis, and probably the trachelomastoids.

The sterno-mastoids have been described as extensors of the head when the head is in the extreme position of extension and it is still taught in the most recent books on anatomy. Duchenne[3] also stated as the result of electrical stimulation that the sterno-mastoids "produce, on the contrary, extension of the head when it happens to be in a certain degree of reversal backwards." With this opinion I find that I cannot agree. Some time ago I made some observations on this point and I failed to find that the sterno-mastoids acted in any position as extensors of the head. To test this let the head be placed as far back in extension as it will go and then direct the person to press the head backwards against resistance; the tendons of the sterno-mastoids will not be felt to tighten, but if, on the contrary, flexion of the head forwards be made in that position against resistance the tendons immediately become tense. I was therefore glad to find, which I was not aware of at the time, what Winslow[4] had stated: "The insertions of these muscles," he says, "in the posterior part of the mastoid apophyses has made some anatomists believe that they are more proper to bend the head backward than forward, their insertions being behind the condyloid articulation of the os occipitis"; but in opposition to this view he adds that "the moveable point [of the insertions] can only be determined to that part which is nearest the fleshy body and the most anterior, and consequently not situated so far back as is imagined." And on the same subject he remarks "that experiments made on dead bodies have been apt to mislead"—an opinion which I should wish to indorse.

I have no special observation to make on the ordinary muscles, but on the extraordinary muscles of respiration I should say that I have observed several cases of dyspnœa and that among the first muscles to come into action are the sterno-mastoids and as these muscles then take their fixed point from the skull the head has to be fixed by the extensors of the head. Of the other muscles I have never seen any action of the pectoralis major in dyspnœa and I think that the action which is attributed to that muscle is really performed by the pectoralis minor. This muscle could be seen acting as an inspiratory muscle in the cases which I have observed where the pectoralis major was absent. The origin of the pectoralis major from the cartilages of the ribs and the direction of its fibres are also against its having much power as an inspiratory muscle and it does not come into action till the end of a forced inspiration. Of the other extraordinary muscles the latissimus dorsi, the serratus magnus, the scaleni—though the actions of both these muscles were doubted by Winslow—and the clavicular-occipital fibres of the trapezius are the chief ones that can be observed. The serratus magnus I have observed not to be acting in one case of severe dyspnœa.

With reference to the expiratory muscles, and especially those used in such violent efforts as coughing and sneezing, I would refer to one of the muscles which is usually described as a muscle of respiration only—the latissimus dorsi. I observed a few years back that it is a powerful expiratory muscle and this is an action which anyone can prove for himself by putting the hand on the posterior fold of the axilla and on coughing a strong contraction of the latissimus dorsi will be felt. As I have already mentioned, this muscle acts also as an inspiratory muscle, using the fibres which take origin from the lower ribs to elevate them, and, therefore, it is a muscle which acts in both inspiration and expiration, a circumstance which it is rather difficult to explain. In expiration it doubtless acts by compressing the posterior part of the abdomen, in which action it is joined by the external obliques and recti muscles so that the abdominal cavity is compressed in all directions, and as the origin of the latissimus dorsi from the lower ribs interdigitates with the origin of the external oblique, and as this contracts violently in expiration, it seems probable that the costal origin of the latissimus dorsi in expiration acts to fix the ribs to allow of the external oblique muscle to act with precision. Another muscle which contracts in expiratory cough is the lower part of the trapezius, but whether its action is for the purpose of fixing the scapula it is difficult to say. The action of all the respiratory muscles is bilateral and their relation between the bilateral and the unilateral actions of the latissimus dorsi will be referred to later.

The time at my disposal will not permit me to say anything about the movements of the lower limb or of the ocular or facial movements. I propose therefore to leave the question of the muscles observed to take part in these different movements.

In describing the muscles which take part in any movement I have not made any mention of the action of the antagonists, and as they are considered by some authors to take a very important part in every movement it is necessary in any account of the action of muscles to consider the various views which have been held on the subject. Before considering these views, however, we must first define what is meant by the antagonists of a movement. The antagonists of a movement are those muscles which move the joint in a direction which is diametrically opposed to this movement. This definition, or one similar to it, is so obvious that it seems hardly necessary, but in the action of closing the fingers and thumb, which, as we have already seen, is produced by the flexors of the fingers and thumb acting with the extensors of the wrist, the latter have been described as the antagonists of the flexors of the fingers and thumb. Now the movement to be performed is flexion of the fingers and thumb and the movement which is diametrically opposed to this is extension of the fingers and thumb, and this movement cannot be performed by the extensors of the carpus, but by the extensors of the fingers and thumb which are the true antagonists. The extensors of the carpus are synergial muscles in this movement.

The question of the part played by the antagonists in a movement has exercised men's minds from the time of Galen to the present day, and it is still a matter of controversy. According to Galen,[5] "each muscle has only a single movement which is active, it does not possess the opposite movement except accidentally. On the other hand, a muscle acts when it draws towards itself the part which is in movement, but it does not act when it is drawn to the opposite

[1] Lectures I. and II. were published in THE LANCET of June 20th, pp. 1715 and 1719 respectively.

[2] An Anatomical Exposition of the Structure of the Human Body, by James Benignus Winslow. Translated from the French original by G. Douglas, M.D. Fourth edition, corrected. 1756. Section III., pp. 320, 372.

[3] Physiologie des Mouvements, 1867, p. 715.

[4] Loc. cit., section iii., p. 1075.

[5] Galen's works, De Usu Partium, part vii., book 1, chapter iv., p. 331; translated by Dr. Daremberg. Paris, 1856.

side by another muscle. ..... For each part, put into movement by the muscles as by reins, being obliged to take part in the activity of the two sides, presents in turn one of the two muscles tense and the other relaxed." It is evident from the above quotation that Galen considered that the antagonists to a movement do not contract when that particular movement is being executed. I am unable to find any other reference to the question of the antagonist till Winslow's work. Winslow[6] defined the antagonists in the following terms: "*To move any part or to keep it in a determinate position all the muscles belonging to it must coöperate*"—the italics are mine—"some of them drawing the part directly to the situation or attitude designed, some moderating this first motion by acting in a contrary direction, and others directing it laterally. The first kind of these muscles I call principal movers, the second moderators, and the third directors. The moderators in general are the same with those termed antagonists and the want of their action is in many cases supplied by the weight of the part to which they are fixed or by the additional weight or resistance of some other body." From this extract it is evident that Winslow considered that to move a part all its muscles, including the antagonists, coöperate, but he makes the important proviso that the want of their action is supplied by the weight of the part or by external resistance. This proviso limits very considerably the occasions when, according to Winslow, the antagonists act, for if they do not act when a movement is being performed against gravity or when any resistance has to be overcome the occasions are narrowed down to unopposed movements taking place in the horizontal plane where gravity cannot act. Such a movement would be that of flexion or extension of the terminal phalanges of the fingers in the horizontal direction, or of the elbow in the same plane, or of rotation of the head to the right or to the left.

In his Croonian lecture before the Royal Society John Hunter[7] describes the actions of muscles as immediate and secondary; the first produces immediate action of the part, the second produces the assistant, supporting and regulating actions, as in walking when the right leg moves, the muscles of the left side of the trunk act to support the whole of the left leg. On p. 262 he states that "the relaxers which become the sustainers of the muscles in action never allow themselves to relax to their full extent while the contractors are carrying on the motion of a part as it would produce weakness." The contractors, I conclude, correspond to Winslow's principal movers and the relaxers to his moderators or antagonists. If this be so Hunter evidently considered that the antagonists are never fully relaxed, but I am unable to find any expression of opinion as to whether this is modified when the movement is resisted.

Duchenne[8] is very explicit in his opinion about the action of the antagonist and he says: "In the main all voluntary movement to be executed with precision ought to be moderated by its antagonist muscles." He goes on to state that this opinion is contrary to the theory of Galen, which I have already mentioned, "and has been propagated to the present time in spite of a kind of resistance made against it by the illustrious Winslow." Duchenne quotes Winslow, but he omits the proviso of Winslow that the antagonists are excepted when any weight or assistance supplies their action. Further on in the same chapter[9] Duchenne states that he has "demonstrated experimentally that all the movements of the limbs and trunk result from a double nervous excitation by virtue of which the two orders of muscles ..... the impelling and the moderating associations are put simultaneously into action—one to produce the movements, the others to moderate them. Without ..... this entente of the antagonists the movements lose inevitably their precision and certainty." I gather from this that Duchenne's opinion is more comprehensive than Winslow's and that he considers that in all voluntary movements the antagonists take part.

On this subject of the antagonists interesting papers have been published by Beaunis[10] and by Demeny.[11] The latter has made some most important observations by means of two Marey's myographs fixed on to the biceps and triceps by which tracings of these muscles under varying conditions were obtained. The conclusions which he arrived at were as follows. If static resistance is made against an effort tending to produce flexion or extension the antagonists of this movement relax. The antagonists are relaxed also during the movement every time that an external resistance acts in the way of their action whether this resistance be overcome or not by the muscles contending against it and whether these muscles shorten or elongate. In natural movements (where there is no resistance) where they are of a slow and uniform rate there is a simultaneous action of the antagonists; where the rate is variable the antagonists act as moderators of the rate and come into play a little before the movement has ceased or changed its character. Demeny's observations are therefore in confirmation of Winslow's rather than those of Duchenne. On the other hand, experiments have been made by Sherrington[12] on the action of the antagonists by electrical stimulation of the excitable cortex and he has found that in addition to contraction of the principal muscles taking part in a movement there is not only relaxation but inhibition of the tone of the antagonists of this movement. Sherrington and Hering[13] have also shown more recently the same thing by electrical stimulation of the part of the cortex where movements of flexion of the elbow were represented. They found that when the biceps contracted there was relaxation of the triceps. It therefore seems probable that the inhibitory action of the antagonists starts in the same part of the cortex and takes the same course in the pyramidal tract as the excitatory action of the principal movers. Sherrington's observations therefore agree with those of Demeny, so far as strong opposed movements are concerned. With regard to weak movements, Sherrington has informed me that even with minimal stimulation he still obtains relaxation of the antagonists; there is, therefore, apparently, a difference between the results produced by stimulating the excitable cortex in the monkey and those of making a person perform a slow unopposed movement, as the antagonists were found to be relaxed on stimulation according to Sherrington and to contract in the case of slow voluntary movement according to Demeny. From my own observations I have held that in strong movements against resistance the antagonists are always relaxed and I expressed that opinion in a paper which I wrote in 1891.[14]

This power of relaxing a group of muscles by getting the patient powerfully to contract the antagonists against resistance, I have for some time employed for clinical examination and the cases in which it is most useful are in affections about the shoulder-joint where a patient is unable to abduct the arm without the inferior angle of the scapula moving outwards at once, a sign that either the deltoid is paralysed or that it is not acting owing to painful rheumatic changes in the joint or that the joint is ankylosed. If the deltoid be contracted it can be relaxed by first passively abducting the humerus as near the horizontal line as possible and then directing the patient actively to adduct the humerus against resistance when the deltoid will be relaxed. On then again directing the patient to try to keep the arm abducted the deltoid will be felt to contract if it is not paralysed.

With regard to the question as to whether the antagonists act in all unopposed movements, as the experiments of Demeny would seem to show, I should like to point out that in the movement of rotation of the head we have an exceptional opportunity of examining the sterno-mastoid muscles, and in addition the movement of the head being in the horizontal plane there is no chance of any error from the action of gravity. Here one of the muscles is a principal mover while its fellow of the opposite side is its antagonist, so that in rotating the head with the face turned to the patient's right the left sterno-mastoid is a principal mover and the right sterno-mastoid is its antagonist. On rotating the head slowly or quickly I am unable to find either on inspection or on palpation that there is any contraction of the right sterno-mastoid; and, further, if the head be turned very quickly and be suddenly checked there is still no contraction of the right sterno-mastoid. It is quite possible that some of the other rotator muscles must act as a check to the movement, but I should say that the right sterno-mastoid certainly does not—and the muscle is so superficially situated that it would hardly be possible to escape observation. To sum up, I should myself agree with Winslow that in all movements

[6] Loc. cit., vol. i., section iii., p. 159, No. 41.
[7] The Works of John Hunter, F.R.S., 1837, p. 249.
[8] Loc. cit., p. 759.
[9] Loc. cit., p. 766.
[10] Archives de Physiologie, fifth series, tome 1, 1889.
[11] Ibid., tome 2, 1890.
[12] Proceedings of the Royal Society, 1893, vol. liii., p. 407.
[13] Ibid., 1897, vol. lxii.
[14] On Some Points in the Action of Muscles, Brain, vol. xiv., 1891.

where there is extreme resistance or where the weight of the limb has to be moved against gravity the antagonists do not act. On the other hand, in the unopposed movements of rotating the head to the right, where gravity does not act, I cannot find that there is an action of the right sterno-mastoid, the antagonist to this movement; also Sherrington found by cortical stimulation that the antagonists to the resisting movement were relaxed.

Before leaving the question of the antagonists I should like to mention a clinical case where these muscles acted in a way which I have not seen before. It was the case of a girl, aged 18 years, who had incomplete right hemiplegia and hemianæsthesia. She had, however, no signs of organic disease and the case was considered to be one of functional or hysterical paralysis. The great point of interest about the case was that whenever she was asked to perform a certain movement the first action observed was that of the antagonist muscles. For instance, on being told to extend the elbow the first muscle observed to contract was the supinator longus, one of the antagonists to the movement of extension. This contraction of the supinator longus was followed immediately by that of the triceps and there was then a confusion with to-and-fro movements due to the alternate contraction of the extensors and flexors of the elbow. A similar thing occurred when she was told to flex the elbow; then the triceps was felt to contract first and was followed by a movement of the flexors of the elbow, and then the joint moved to and fro with much confusion. I have observed a similar condition to occur in dorso-flexing the ankle, a joint in which the typical to-and-fro hesitating confused movement is so often seen in these cases of hysterical paralysis. In another case on asking the patient to extend the knee the first contraction was felt in the flexors of the knee. In all these cases as the patient improves this symptom passes off and the joint is then moved in the normal way. This condition of the antagonists acting before the principal movers begin I have never seen in any other conditions besides those of so-called hysterical or functional paralysis. I therefore venture to think that it is a diagnostic symptom of this condition.

A muscle may take part in two different movements, as, for instance, the biceps brachii takes part with the supinator brevis in the group of muscles set apart for the movement of supination and also takes part with the brachialis anticus, supinator longus, and pronator teres in that for the performance of the movement of flexion of the forearm. It is therefore possible that if one of these movements is lost by an organic lesion of the central nervous system and not the other, the biceps which take part in both movements may be paralysed for the one movement and not for the other. I have seen cases of hemiplegia where the movement of supination was lost but not that of flexion of the elbow. Another movement which is often lost in hemiplegia when the arm is paralysed is that of elevation of the shoulder. Now the muscles which take part in the elevation of the shoulder can also, taking their fixed point from the shoulder, draw down the head and neck to that side; such muscles are the trapezius (clavicular fibres) and the levator anguli scapulæ. I have observed cases of hemiplegia where these muscles were paralysed when they acted as elevators of the shoulder but not when they acted as lateral flexors of the neck—a condition which would probably signify that the movement of elevating the shoulder was represented in a different part of the excitable cortex from that of adducting the head to that shoulder. The same thing occurs with the ocular muscles where each internal rectus can act when it takes part in conjugate movements with the external rectus of the opposite eye, but when the two internal recti act together in converging the eyes they are paralysed. Some of the above cases are instances of paralysis of a muscle for one form of unilateral action and not for another, but there is another class where a muscle may be paralysed for a unilateral movement of the arm but not when it takes part in the bilateral action of respiration.

Dr. J. Hughlings Jackson was the first to call attention to the paralysis of the clavicular fibres of the trapezius in elevating the shoulder in hemiplegia while it was still able to act as a bilateral muscle in deep inspiration. I have already described how the latissimus dorsi takes part in inspiration and expiration and that it can readily be felt to contract on coughing. The muscles of both sides here act together and, as far as I know, it is not possible for a person voluntarily to inspire or to expire as in coughing, using only the muscles of one side of the chest. Besides this bilateral movement there is the unilateral action of the muscle as an arm muscle, where it takes part in the movement of adducting the humerus. As I pointed out in a paper read before the British Medical Association in 1898,[15] the latissimus dorsi of both sides takes part in the violent expiratory movement in the production of a cough or a sneeze. A cough can be produced reflexly or voluntarily, but a sneeze only reflexly, and we have therefore three conditions under which the latissimus dorsi may act, viz.:—(1) acting with the muscle of the opposite side as an expiratory muscle: (*a*) reflex coughing or sneezing, and (*b*) voluntary coughing; and (2) acting independently of the other side as an arm muscle. The next question is what will be the action of this muscle in cases of hemiplegia. I have now examined a great many cases of hemiplegia in which the arm was paralysed and in which there was complete loss of the movement of adducting the humerus to the chest wall and where consequently the action of the latissimus dorsi as an adductor was absent. Of the 12 cases which I described in my original paper in ten the lesion was presumably cerebral and probably in the internal capsule, while in two of the cases the lesion was ascertained and was in one case a tumour of the ascending frontal convolution and in the other a tumour of the centrum ovale. In all of these cases, with the exception of two, the following conditions were found. 1. In reflex coughing or sneezing the respiratory action of the latissimus dorsi was about equal on the two sides. 2. In voluntary coughing the action of the latissimus dorsi was obtained on both sides but it was frequently diminished in action or occurred later on the paralysed than on the normal side. 3. On attempted voluntary adduction of the humerus there was no action of the latissimus on the paralysed side. In two of the cases of hemiplegia where there was an exception to the general rule given above it was found that no movement was obtained on the paralysed side in voluntary coughing, but in reflex coughing or sneezing the latissimus dorsi on the paralysed side was seen to contract. A lesion, therefore, of the—let us say left—motor cortex of the internal capsule will paralyse the right latissimus dorsi as a unilateral arm muscle but will not paralyse it when it acts as a bilateral muscle of respiration reflexly and in most cases when it so acts voluntarily.

Before leaving this subject I should like to mention that this bilateral action of the latissimus is of value in diagnosing cerebral lesions from those of the spinal cord and peripheral nerves in those cases where the arm and leg of one side are involved without the face. In the case of a lesion, such as a tumour, pressing on one side of the spinal cord between the respiratory centre and the brachial enlargement, all the movements of the latissimus dorsi, including unilateral arm movement, bilateral voluntary coughing, and reflex coughing, would be lost, while in lesions above the level of the respiratory centre the reflex bilateral movement of coughing would be preserved.

Another example, but of a different kind, of paralysis of a muscle for one movement and not for another I have observed in the case of the upper or clavicular fibres of the pectoralis major. This muscle I have already referred to as one which has two actions: it acts with its lower or sternal fibres in adducting the humerus to the middle line and it also acts with the deltoid in advancing the humerus. In certain cases where the deltoid is paralysed, although the clavicular fibres of the pectoralis major can be felt to act well in conjunction with its sternal fibres in adducting the humerus, they make no attempt to advance the humerus, or when it is passively advanced to contract and to keep it in that position. The first case which I published[16] was one of paralysis after an accident and was due to lesion of the brachial plexus or of the cells of the anterior horns of the spinal cord. I have seen several other cases occurring in lesions of the cord or brachial plexus. This class of case differs from the preceding one in that we have here paralysis of a muscle for one movement and not for another, arising not from a cerebral lesion but from a lesion of the cord or the brachial plexus. This selective paralysis from a lesion of the cells of the anterior horns is in favour of the theory that these cells are arranged in a physiological rather than an anatomical manner, but as there are other reasons against this theory is it possible that there is any other explanation?

[15] On the Bilateral Action of the Latissimus Dorsi in Hemiplegia, Brit. Med. Jour., Oct. 1st, 1898.

[16] Brain, vol. xiv., 1891.

Is it possible that the upper fibres of the pectoralis major which act with its lower half are not the same as those which failed to act with the paralysed deltoid? I do not think so, because there were no signs of degeneration to electrical testing in the pectoralis major and it is not probable that the same fibre should have a double nerve-supply from different parts of the brachial enlargement. Another explanation might be that when the upper fibres of the pectoralis major act with the deltoid in advancing the arm they can only do so after the deltoid has acted first and that as the deltoid does not act at all the pectoral will not start the action, but against this explanation is the observation that the weight of the arm is sufficient to bring out the action of the upper fibres of the pectoralis major and that strong resistance is not required, as in the case of the relation of the extensors of the wrist to that of the extensors of the fingers in the movement of extending the wrist described in a previous lecture. At the present time I am not able to give a definite explanation of this selective paralysis of the upper fibres of the pectoralis major.

Another question which has arisen in the examination of the actions of muscles is whether a muscle ever takes a principal or direct action in a movement which is diametrically opposed to its usual action. In considering this point it is obvious that the query could not be made in the case of a hinge joint (ginglymus) such as the elbow, as the triceps could not possibly take a direct part in the action of flexion of the elbow. It is, however, in joints like the radio-ulnar (rotatory) articulations or in ball and socket (enarthrodial) joints that it would be possible for a muscle to take part in two opposite movements. If a list is made of the muscles which are considered by anatomists to have this double action it will be found to contain the following muscles: the supinator longus, the pectoralis major clavicular fibres, the deltoid posterior fibres, and both sterno-mastoids acting together.

As I have pointed out in a previous lecture the supinator longus has been considered by many anatomists to be both a pronator and a supinator and in one of the most recent works on anatomy[17] it is stated that "the brachio-radialis (or supinator longus) assists in flexion and pronation on the one hand and in extension and supination on the other hand." This, therefore, expresses the opinion that the same muscle does take part (as a principal mover, I conclude) in two movements which are diametrically opposed to each other. With this opinion I find that I cannot agree, as from the examination of the muscle on the living subject I consider that it certainly did not take part in extension and I cannot find that it contracts in supination, its action besides flexion of the elbow-joint being perhaps very slight pronation at the end of a strong movement.

The clavicular fibres of the pectoralis major were considered by Duchenne to be both elevators and depressors of the humerus when the arm was above the horizontal line. From my observations these fibres never act in depressing the humerus, a movement which is performed by the inferior or sternal fibres of the pectoralis major.

The posterior fibres of the deltoid were considered by Duchenne to be elevators of the hanging humerus as far as an angle of 45° to the vertical, beyond which they became depressors and antagonists to the rest of the deltoid; in other words, that after an angle of 45° the posterior one-third of the deltoid suddenly changes its mind, so to say, and takes part in a movement which is diametrically opposed to the action of its previous movement. From my observations I consider that the posterior one-third of the deltoid only takes part in adduction, an opinion which I was glad to find was expressed by Richer.[18]

The last movement which I have cited is that of the two sterno-mastoids acting together. Their ordinary action is to flex the head forwards as in lifting the head from a pillow, but most anatomists describe that when the head is put back far enough these muscles act as extensors of the head. I have already expressed the opinion that I do not think that this action occurs. In cases of progressive muscular atrophy affecting the extensor muscles of the head at the back of the neck, but not the sterno-mastoids, the head falls forwards till the chin rests on the chest, due to the inability of the extensors to hold up the head against gravity, but if the patient leans far back in a chair so that the head can be allowed to extend backwards as far as it will go there will still be a slight contraction of the flexors—viz., the sterno-mastoids—to counteract gravity. Now if while in that position the patient be told to extend the head further against resistance he cannot do so owing to the paralysis of the extensors at the back of the neck, but the sterno-mastoids, so far from contracting, actually relax. There may be other muscles which may act in two opposite ways, but of those which I have cited I cannot find that any one of them takes a principal part in a movement which is diametrically opposite to its usual action.

There is, however, one muscle which certainly takes part in two opposite movements—viz., the latissimus dorsi, which contracts in both inspiration and expiration, though the action is stronger in expiration than in inspiration. I have already referred to this point and I would only say now that I think the part of the muscle arising from the three lower ribs must have a different action to the main part arising from the spine and the iliac crest. In inspiration this costal origin acts by elevating the ribs; on the other hand, in expiration these costal fibres fix the ribs and enable the external oblique muscles, whose origin interdigitates with that of the latissimus dorsi, to contract vigorously while the main part of the latissimus acts with the external oblique as a principal mover in compressing the abdominal cavity. I should, therefore, look upon the costal fibres as prime movers in inspiration and as synergic muscles in expiration. I think, therefore, that one is justified in making the statement that a muscle does not take a principal part in a movement which is diametrically opposed to its usual action or, in other words, in two movements which are opposite in direction. I make this qualification with regard to muscles taking a principal part in a movement, as in my paper in *Brain*[19] I did not make this qualification, but I had not then noted the various muscles which act as synergic muscles in a movement. For instance, in both supination and pronation of the forearm the triceps acts to counteract the flexor action of the biceps and of the pronator teres, but as the triceps is not a principal mover in either of these movements its action would not be against the statement I have made.

Having now described the muscles which enter into and produce the movements of the different joints I propose now to say a few words about the manner in which the muscles which take part in producing any movement are associated together. In the first place do all the muscles which can take part in a movement always act whether the movement is a weak one or a strong one? I believe that in the case of a single muscle which is stimulated through its nerve physiologists hold that all the fibres of the muscle contract and that the minimum amount of work is produced not by using only some of the muscle fibres, but by using all the fibres to a slight degree of contraction, while when the maximum work is required the same fibres contract strongly.[20] The question arises whether the same principle can be applied to groups of muscles and we have to determine in producing the minimal force whether all the muscles taking part in the movement contract or only certain muscles in the group. Or, to take a simile from marine engineering, whether when a ship is travelling at half-speed all the boilers are working at half their full pressure or only half the boilers are working at full pressure.

It is not very easy to find a group of muscles the individual members of which can be examined and the order in which they take part in a movement noted. I think that the movement of supination which is effected by the supinator brevis and the biceps is one in which it is possible to ascertain how soon the biceps takes part in the movement. For this purpose, if the elbow be rested on a table and the forearm be kept in a vertical position midway between flexion and extension and at right angles to the upper arm, it will be found that the forearm can be supinated if there be no resistance without any contraction of the biceps—a point which can be ascertained by hooking the forefinger round the tendon of the biceps at the elbow. If now resistance be made to the supinating forearm the biceps will be felt to contract after the resistance has reached a certain amount. I have measured this amount and find that it comes to one pound. It therefore appears that the supinator brevis will do the work of supination when only the inertia of the bones has to be overcome, but as soon

[17] Text-book of Anatomy, edited by D. J. Cunningham, F.R.S., p. 335, 1902.

[18] Physiologie Artistique.

[19] Brain, vol. xiv., 1891, p. 57.

[20] Cf. Gotch: Journal of Physiology, Dec. 15th, 1902.

as work over one pound is required to be done the biceps is called in to help. The relation of the extensores digitorum to the extensores carpi in extending the wrist is another illustration. These two examples, I think, show that there is a definite order in which the muscles for the performance of a movement come into action.

All the muscles which are grouped together for the performance of a movement do not come into action when only slight effects are required, but a certain increase of work has to be encountered before they all act. In connexion with this it is interesting to note that Sherrington[21] has found a similar condition in reflex actions, as on stimulating electrically the posterior root of the fifth cervical nerve with a Kronecke secondary coil at 15, good contraction of the supinator group was obtained in the monkey, but to evoke contemporaneous action of the biceps with the supinator a much stronger current of 90 was required.

Besides the muscles directly concerned with a movement other muscles are put into action as in performing the different movements of flexing the fingers, of flexing the fingers and thumb as in grasping, and of flexing or extending the wrist we put into action only the muscles which are directly concerned with these movements if the force exerted is slight or moderate, but if these movements are performed more powerfully other muscles are seen to join in the movement. These other muscles which are brought into the movement are the flexors and extensors of the elbow. I have therefore made some observations to ascertain which of the movements of the wrist and digits are accompanied by contraction of the flexors of the elbow, which by the extensors of the elbow, and which by both these sets of muscles. I have also measured the amount of force required to be exerted before these muscles acting on the elbow join in the movement and also to test the influence of position I have made the observations when the forearm was in the position of pronation and when in that of supination.

Table showing the Sequence of Movements in the Upper Arm to Movements of the Hand in Positions of Supination and of Pronation.

Movement performed.	Position of the forearm.	Amount of work required to be done before the triceps contracts.	Amount of work required to be done before the biceps contracts.
Fingers flexed	Supinated.	No contraction.	18 pounds.
Traction at right angles to the line of the forearm	Pronated.	1½ pounds.	No contraction to 18 pounds.
Fingers extended	Supinated.	4 pounds.	No contraction.
,, ,, ...	Pronated.	No contraction.	,, ,,
Thumb extended	—	,, ,,	—
Thumb and fingers flexed (grasping) ...	Supinated.	22 pounds.	33 pounds.
Thumb and fingers flexed (grasping) ...	Pronated.	22 pounds.	40 pounds.
Wrist flexed	Supinated.	No contraction to 32 pounds.	22 pounds.
,, ,, ...	Pronated.	2 pounds.	No contraction.
Wrist extended	Supinated.	4 pounds.	No contraction to 24 pounds.
,, ,, ...	Pronated.	No contraction.	22 pounds.

In these observations the forearm was laid flat on a table in the position of pronation or supination, the elbow was placed at a right angle and relaxed, and the amount of work done was either registered by a dynamometer, which was grasped in the hand, or traction was made on the joints under observation by a band passed over the phalanges or the metacarpal bones and connected with a spring balance which registered the amount of work which the movement had to resist before the biceps or triceps contracted. The contraction of the biceps was ascertained by the finger hooked round its tendon near its insertion and the contraction of the triceps was easily felt by the finger and thumb placed on either side of it just above the elbow. It is to be remarked in the accompanying table of sequences that in some cases a very slight amount of resistance was able to bring out the coöperation of the triceps. For instance, in the position of pronation the triceps is called into action when the resistance to the flexion of the fingers or wrist is only from one and a half to two pounds and in the position of supination the triceps contracts when the resistance to the extension of the fingers and wrist is only four pounds. Why in the converse conditions the biceps never comes into the movement till much higher pressures are experienced is a question which further observations will be required to elucidate. First, taking the forearm in the position of supination it will be seen on looking at the table of the sequence of movements, or perhaps I should say the sequence of synergic or fixing muscles, that in flexion of the fingers, whereas the biceps contracts when the resistance to the movement of flexion amounts to about 18 pounds (8 kilogrammes) the triceps does not contract at all. Also in extension of the fingers the triceps contracts when so little resistance as four pounds (one and three-quarter kilogrammes) is experienced and no contraction of the biceps occurs even with a pressure which can overcome the extension of the fingers. These observations show that in the supinated position of the forearm flexion of the fingers, when opposed, is followed by contraction of the biceps, and extension of the fingers, when opposed, is accompanied by contraction of the triceps. Secondly, that in grasping with the fingers and thumb, which, as we have seen in a previous lecture, is performed by the flexors of the thumb and fingers and the extensors of the wrist, the contraction of both the biceps and triceps occurs but that of the triceps first. Thirdly, in extension of the thumb only, a movement which would probably not affect the elbow-joint, I could not discover any contraction of the biceps or triceps; in other words, the muscles producing flexion or extension of the elbow are brought into a movement which is in the direction of flexion or extension respectively or to counteract the tendency of the resistance to move the elbow in the opposite direction, but in a movement like grasping, which is not in the direction of flexion or extension, both sets of muscles (triceps and biceps) contract and the elbow is kept fixed. That this sequence is very much due to position is shown by the opposite results which were obtained according as the forearm was pronated or supinated. For instance, in flexion of the fingers or of the wrist in the supinated position the biceps contracted at 18 pounds and 22 pounds respectively but not at all in the pronated position. This is probably because when the fingers or wrist is flexed against resistance with the forearm supinated the opposition to movement of flexion of the fingers or wrist is in the direction of extension of the elbow and the biceps contracts so as to prevent the elbow being extended when the pressure on the wrist or finger reaches a certain amount. But when the forearm is in the pronated position the conditions are reversed; the direction of the opposition to the flexion of the wrist is now in the direction of flexion of the elbow and to prevent the elbow being flexed it is now the triceps which contracts and not the biceps.

To elucidate still further the question of position I have made experiments on the movement of grasping with the fingers and thumb: (1) with the forearm resting free on a flat surface and (2) with the forearm fixed immoveably on a flat surface. It will be seen on looking at the table of sequences that in the movement of grasping the contraction of the triceps occurs sooner than that of the biceps. As there was evidently some disturbance of the position of the elbow which necessitated contraction of the triceps before that of the biceps the forearm was fixed to prevent any movement of the elbow. In the position of supination, whereas with the forearm resting freely the triceps contracted when the grasp registered 24 pounds, with the forearm fixed it did not contract till the grasp was almost doubled—i.e., 45 pounds. In the position of pronation with the forearm free the triceps contracted when the grasp was 13 pounds and with the forearm fixed at 29 pounds. The same conditions were obtained when the forearm was in the mid-position between supination and pronation. The contraction of the biceps was not influenced by the position of the forearm being free or fixed. These observations show that the contraction of the triceps must be to counteract some action of flexion of the elbow by the muscles taking part in grasping and on carefully watching the movement of grasping when the forearm rested free on a flat surface a certain degree of flexion of the elbow

[21] Transactions of the Philosophical Society, Series B, vol. cxc., 1898, p. 154.

was seen. I have measured the force of this flexion of the elbow by a band round the lower end of the forearm, which was attached to a fixed point with a spring balance interposed, and I find that the force exerted by the elbow in grasping amounts to one pound. I have also ascertained that it makes no difference whether the grasp is 29 pounds or the maximum is 54 pounds, as the amount of force produced by this slight flexion of the elbow is in both cases one pound. This would mean that in the supinated position whatever the strength of the grasp the triceps so adapts itself that it will not permit flexion of the elbow of more strength than one pound.

Another question which arises is, Why in the supinated position does the triceps not cooperate till the grasp has reached 24 pounds, whereas in the pronated position it takes part in the movement when the grasp has reached 13 pounds and in the mid-position at 20 pounds between the two other fingers? It must mean that in the position of pronation the forearm muscles produce flexion of the elbow sooner than in the position of supination and therefore that the triceps must intervene sooner to prevent flexion of the elbow. If this be true it is in harmony with what was stated in a previous lecture that patients who have lost their proper flexion of the elbow manage to flex this joint by first putting the forearm into the position of pronation.

LECTURE IV.

Delivered on June 18th.

MR. PRESIDENT AND GENTLEMEN,—In my last lecture I described that in the movements of the wrist and fingers, when they were performed powerfully, there was contraction of the muscles acting on the elbow-joint either of the biceps or the triceps or of both. And I pointed out that in flexing of the fingers and wrist the biceps contracted and in extending the fingers and wrist the triceps contracted, while in closing the fist the triceps acted first, followed by the biceps. The fixation action of muscles was described by John Hunter in his Croonian Lectures on Muscular Motion delivered before the Royal Society in 1777,[22] where he stated that "there is in every animal, therefore, a fixed point from which the parts of the body take their principal motions. In the human body this fixed point seems to be in the joints of the thigh bones, which point being in the middle of the body must be common to the extremities. ..... Besides this there are many fixed points, so that the body is to be looked upon as a chain of joints whose general centre of motion is in the joints of the thighs." Now this centre of motion corresponds to the point of centre of gravity described by subsequent observers. This position of a fixed point depends on the attitude of the person and the place where his body comes in contact with the ground and where it gets a firm foundation, as, for instance, if a person advances the upper limb when lying on his back on the ground the fixed point will be the cervico-dorsal spine; if he perform the same movement sitting on a chair the fixed point will be the pelvis; if, however, the same movement be performed in the erect posture the fixed point will be where the soles of the feet come in contact with the firm ground. We therefore, it seems to me, have to differentiate in any movement between the muscles which take part directly in that movement and the muscles which are used to fix the joints which lie between the joint which is actively engaged and the fixed point or base on which the structure works, and again these fixing muscles have to be separated into those which always take part in the strong movements irrespectively of the posture of the person which we may call *essential* and those which depend on the position of the person and where his fixed point or base is, which we may call *postural*.

As an example of the essential muscles we may take the contraction of the triceps and biceps which accompany the movements of the hand and which I have just described, and as an example of the postural muscles the contraction of the erector spinæ when the upper limb of the opposite side is advanced or abducted and which, as I showed in a former lecture, only contract in certain positions of the spine to prevent the equilibrium being disturbed. I should therefore describe the muscles taking part in any one movement as: (*a*) prime movers; (*b*) synergic muscles; (*c*) fixation muscles: (1) indispensable or essential and (2) postural; and (*d*) antagonist muscles in occasional movements. I take as an example the movement of grasping an object or closing the fist. Here the prime movers are the flexors digitorum and flexor pollicis and small thumb muscles. The synergic muscles are the extensores carpi and the essential fixation muscles are the triceps and biceps. Another example is the movement of advancing the humerus. Here the prime movers are the deltoid anterior fibres, pectoralis major superior fibres, biceps; the synergic muscle triceps (outer and inner heads) which come into play to counteract the flexor action of the biceps; the fixation muscles: (1) essential, trapezius, and (2) postural, erectores spinæ. The principal or prime movers are the muscles which directly produce the action required and are called by some authors the antagonists; the synergics are the muscles which, as I have previously stated, are brought into the combination when a prime mover has, by passing over two or more joints, two or more actions of which only one is required and the synergics are the muscles which neutralise these undesired actions; they are represented in the first example given above by the extensores carpi. The fixation muscles, as I have already described them, are: (1) those which are essential to the movement in all postures and which are not influenced by the position of the person; and (2) those which only act to prevent the equilibrium of the trunk being disturbed by the movement and which I have therefore called postural. The antagonists produce the movement which is diametrically opposed to that of the prime movers. Before proceeding to describe the relation of these different classes of muscles to each other I must refer to the classifications of previous observers.

According to Winslow,[23] the muscles may be divided into: (*a*) principal movers; (*b*) moderators or antagonists; and (*c*) directors or collateral muscles which are wanting in hinge-joints (ginglymus), and as an illustration he cites[24] the muscles employed in standing where the principal movers are the gastrocnemii and soleus; the moderators are the tibialis anticus and peroneus medius and minimus; and the directors are the tibialis posticus and peroneus maximus. Winslow does not mention the action of the synergics—i.e., the action of the extensors of the wrist in the movement of closing the fist—but he states that the extensor digitorum moderates the flexion of the fingers in all the determinate degrees of action. Duchenne[25] divides the muscles into: (*a*) associations musculaires impulsives; and (*b*) associations musculaires antagonistes: (1) associations musculaires moderatrices, and (2) associations musculaires collaterales. He includes under (*a*) the synergic muscles as well as the principal movers, so that in the movement of extending the finger, which he gives as an example, he enumerates the extensor digitorum and the interossei and lumbricales and the synergic muscles, the flexor carpi, as being included in group *a*. As an example of the action of the antagonists Duchenne takes the movements of the vertebro-cranial column presiding over the erect position and states that we must consider two kinds of principal phenomena: (1) the muscular association which produces its extension; and (2) the harmony of the antagonistic muscles, which moderate and assure this extension and the normal attitude of the spine. The erectores spinæ form the muscular associations producing extension of the spine and Duchenne goes on to say that "on the harmony of the antagonist muscles or rather on the degree of force of the muscles moderating the extension or flexion of the spine depend necessarily the different degrees of the lumbo-sacral curves." He also cites as collaterals in the same position of standing the lateral movers of the vertebral spine, the quadratus lumborum to prevent the trunk inclining to one side or the other. This illustration which Duchenne gives—viz., the muscles of the vertebro-cranial column during the vertical position—does not to my mind touch the question of the action of the antagonists and the collaterals, and the same objection applies to Winslow's statement about the tibialis anticus and peronei being antagonists to the calf muscles in standing. According to my observations the flexors and extensors of the ankle and the flexors and extensors of the spine are not

[22] The Works of John Hunter, F.R.S., edited by James F. Palmer p. 245. 1837

[23] Winslow: loc. cit., p. 159.

[24] Loc. cit., p. 332.

[25] Loc. cit., p. 676, et seq

acting in antagonism to each other, but each in turn contracts as a prime mover to counteract and to rectify the displacing movements due to gravity and according as this displacement is forwards, backwards, or lateral the erectores spinæ, the recti abdominis, and the lateral movers of the spine respectively on the side opposite to the movement contract. It is, of course, possible to throw all the muscles of the leg into a static contraction so as to convert the leg into a rigid pillar, as in skating a large edge, but here no movement of any joint is taking place and it would not be possible to say which muscles are the prime movers and which are the antagonists, they are all probably prime movers.

John Hunter[26] states in his Croonian lectures that there is no one known muscle in the body that we can throw into action separately and independently of the collateral effects of others. Duchenne[27] has expressed the opinion that partial muscular contractions do not exist in nature, that they are only produced artificially by means of faradisation, and Dr. Hughlings Jackson has laid down that "nervous centres know nothing of muscles, they only know of movements." This in other words means that the ordinary individual has no power to make any one muscle contract by itself; he can only order a movement, he cannot pick one muscle out of a group and order that to contract; he can, on requiring to attain a certain object, order a certain movement, but the mechanism by which that movement is produced and the muscles which are required to perform that movement and the order in which they act is not known to the brain, the order for a movement is given and the movement is performed. Take the following example to which I have referred in a previous lecture. In extending the wrist by means of the extensors of the fingers against resistance the muscles come into action in a definite order which apparently cannot be altered. At first the prime movers are the extensors of the fingers and the interossei and the synergic muscles are the flexors of the carpus; later, if the resistance be increased at a certain point, the extensores carpi come to the assistance of the extensores digitorum, but apparently the individual has no power to make the extensores carpi contract before the pressure has reached the required amount. This, as I have already shown, is well exemplified in lead paralysis of the extensors of the fingers. Here, although the extensores carpi are not affected, the individual is unable to put them into action because it is not their place to extend the wrist with the fingers straight when this movement is begun by the extensores digitorum until the strain to be overcome reaches a certain amount. Another example of the intimate association between the principal movers and the synergic muscles is in the extension of the thumb. Here the extensors of the thumb are the prime movers and the extensor and flexor carpi ulnares are the synergic muscles and it is quite impossible to extend the thumb in the slightest degree and in any position of the wrist without contracting these muscles, and if the extensors of the thumb are paralysed by a peripheral lesion the wrist is adducted to the ulnar side.

Now, although the use of the ulnar muscles is doubtless to counteract the abductor action on the wrist of the extensor ossis metacarpi the contraction of the ulnar muscles is not dependent on the displacement of the wrist, for it takes place even if the thumb be extended after the wrist has been passively abducted to its full extent so that there is no chance of the wrist being further abducted and consequently there is no necessity for the ulnar muscles to contract. We can only therefore conclude that the two sets of muscles are so intimately associated in this movement of extending the thumb that they act together in all positions of the wrist, and when one of the group is paralysed by a peripheral lesion the other set of muscles goes on acting as the innervation from the brain passes down, just as if the whole complex could be thrown into action. As, however, one group is paralysed the movement occurs only in the other group, showing that they are a true synergic combination. It seems, therefore, than an individual has no power voluntarily to leave a muscle out of a combination to which it belongs. Another question is, Is it possible voluntarily to add to the list of muscles which are told off for a certain movement or to supplement them when one is paralysed? For instance, it has been said that the anterior portion of the deltoid can replace part of the functions of the pectoralis major, but it must be remembered that the only function to which this could refer would be the action of advancing or adducting the humerus, but the deltoid is naturally associated with the clavicular part of the pectoralis major in this movement and if the pectoralis were paralysed by a peripheral lesion the deltoid would continue to act exactly as before, the movement being imperfectly carried out: one muscle would not replace the other; on the other hand, when the muscles proper to the movement are paralysed the difficulty may be overcome by a series of other movements. I remember seeing a case with paralysis of the flexors of the elbow in a man who managed to produce flexion of the elbow by advancing the humerus, rotating it out, and by this means letting the forearm be flexed by gravity, but here the muscles were not supplemented by other muscles but an entirely different group was thrown into action by which the desired change of position was obtained. I think, therefore, that although by exercise and training it may be possible to alter the arrangement of the muscles taking part in any movement, the inability of a patient with lead paralysis to induce the extensores carpi to act out of their proper order is against this possibility. By mechanical means, such as transplantation of tendons, first recommended by Nicaladoni[28] in 1882, it is possible to take a muscle out of one group and to put it into another and I have had the opportunity of seeing the results of some of these cases under the care of Mr. E. Muirhead Little[29] and Mr. A. H. Tubby[30] at the National Orthopædic Hospital.

From a consideration of the above statements I think that one is justified in saying that for every voluntary movement there is a definite number of muscles, usually two or more, which come into action in a definite order which cannot be altered and the individual members of which cannot be omitted and cannot be supplemented except perhaps by long training and exercise or by operative procedure. It will thus be seen that in every voluntary movement there must take part a minimal number of muscles below which it is not possible to go. This combination of muscles I would call the ultimate or the minimal components of a movement. Such ultimate components of the movement of extending the metacarpal bone of the thumb are the extensor ossis metacarpi pollicis, the extensor carpi ulnaris, and further on in the movement the flexor carpi ulnaris, and in the movement of extending the first phalanges of the fingers the extensores digitorum and the flexores carpi. Where in the central nervous system are these ultimate components of a movement represented? There are three places where they may be represented—in the spinal cord corresponding to Dr. Jackson's lowest level in the cerebral excitable cortex, or so-called motor area (Dr. Jackson's middle level), or in the centres postulated to preside over the so-called motor area (Dr. Jackson's highest level). With regard to the last place I have no evidence to offer at present. Representation in the spinal cord of the different muscles of the limbs has been studied both experimentally and clinically and the first question that has to be answered is whether the grouping of the cells of the anterior horns of the spinal cord is of a morphological or a physiological type. In other words, whether in the brachial enlargement the cells which supply the muscles forming the ultimate components of any one movement, as that of extending the thumb (such as the extensors of the thumb and the ulnar flexor and extensor of the carpus), are aggregated together, so that a lesion in that particular place would cause paralysis of this movement only.

I do not propose, and I have not the time, to describe all the numerous observations which have been made, but experimentally the chief ones have been done on the roots entering into the brachial and lumbo-sacral plexuses by Müller, Van Deen, and Panizza on frogs, by Peyer and Krause on the rabbit, by Risien Russell on the dog, and by Ferrier and Yeo, Forgues, and Sherrington on the monkey. Anatomically the question has been worked out by Herringham and Paterson by dissection and clinically by Erb, Thorburn, and many others. I also myself read a paper before the Royal Medical and Chirurgical Society in 1885 on cases illustrating localisation in the spinal cord where I showed cases of infantile paralysis with affection of the lower half of the pectoralis major, the triceps, and the latissimus dorsi only and other papers on brachial plexus paralysis.

[26] Loc. cit., p. 248.

[27] Loc. cit., p. 676.

[28] Archiv für Klinische Chirurgie, Band xxvii., Heft 3, p. 660.

[29] Cf. Pediatrics, vol. xi., No. 3, 1901.

[30] Brit. Med. Jour., Sept. 7th, 1901.

Opinions have differed as to whether the arrangement of the cells in the anterior cornua is anatomical or physiological. The arrangement of the cells in the anterior horns and also of the cords of the brachial plexus in a physiological order is supported by a condition which I have observed and which I have already referred to—viz., the paralysis of the pectoralis major (clavicular fibres) for one class of movements but not for another. In lesions of the anterior horns and of the brachial plexus, especially of the fifth cervical root, the deltoid is paralysed, and in passively advancing the humerus it will be seen that along with paralysis of the deltoid the clavicular fibres of the pectoralis major do not make any attempt to contract when the patient makes an effort to keep the humerus advanced. On the other hand, if the patient be directed horizontally to adduct the clavicular fibres will contract in combination with the sternal fibres of the pectoralis major. The paralysis of a muscle from a lesion of a particular part of the anterior horns of the cord when it is associated with one set of muscles and not of the same muscle when it is associated with another set in a different movement would show that the anterior cornual cells had the power of grouping muscles together for a functional purpose. Against the view that each root of the plexus—and therefore presumably the segment of the cord from which it comes—when stimulated produces a well-coördinated movement by groups of muscles acting synergically is the statement of Herringham[31] that although both pronators must act together in one movement the pronator quadratus is supplied by one root and the pronator teres by a different root. The cells supplying a single muscle in the limbs extend over two or more segments. Also no segmental grouping of any of the cell columns of the spinal cord has been detected[32] and this conclusion stands in harmony with the results of the examination of the relation of the reflex movements to spinal segments.

On the whole the evidence is against the cells of the anterior cornua being arranged physiologically for a functional purpose. But although the anterior cornual cells are probably not arranged for functional purposes it does not follow that there is no power of coördination in the spinal cord. This is proved by the various complicated reflex actions which are performed when the spinal cord is cut off from the cerebral influence, reflex actions which as in the plantar reflex are made up of contractions of several joints in the limb. It has been found by Page May[33] and by Sherrington[34] that electrical stimulation of each posterior root produces a definite movement which acts reflexly through the anterior cornual cells. Sherrington also states that the group of cells discharged by spinal reflex action innervate synergic and not antagonist muscles. May's observations on the lumbar enlargement of the monkey and Sherrington's[35] observations on the brachial enlargement are of interest here. May's observations were also made by direct excitation of the spinal cord along the postero-external column: "The movements resulting from excitation of a segment of the spinal cord in the lumbo-sacral region and those from excitation of the corresponding posterior root are similar but are never quite identical. In each case flexion is the predominating effect but in the former case (spinal cord) the resulting movements are always stronger than in the latter (posterior root) and frequently movements in other parts (tail, perineum, &c.) are added." The stimulation of one posterior root causes impulses to pass out along many anterior roots, and while stimulation of the posterior roots always produced flexion, that of the anterior roots produced extension. Sherrington gives a list of the movements obtained by stimulation of all the posterior roots in the monkey, but as his results in the lumbo-sacral cord correspond very closely with those of May, I have given his observations on the brachial part of the cord only. The resulting movements obtained by Sherrington from stimulating a posterior root are synergic and not antagonistic which, as Sherrington remarks, is against the theory of the action of the antagonists which we have already discussed.

Besides the movements obtained by stimulating a posterior spinal root, are the results obtained by Sherrington[36] on the isolated length of the brachial enlargement on stimulating the skin of the palm of the hand; the reflex movements obtained were as follows: Thumb—flexion, adduction; shoulder—retraction, later protraction; wrist—extension; elbow—flexion; and fingers—flexion. It is therefore evident that even in the highest animals, as the monkey, it is possible to evoke such highly coördinated movements as the above. The mechanism by which this is effected is by the afferent fibres of the posterior root which either sends branches forwards in the grey matter of the spinal cord to the neighbourhood of the cells of the anterior horns or the cells of the posterior cornua are interposed between the posterior root fibres and the anterior cornual cells. Whether for the purposes of producing such coördinated movements as those obtained by stimulating the palmar surface the two-cell system is sufficient it is difficult to say, but it has been suggested[37] that the two cells are probably connected by the help of a mediate system of cells. The time at my disposal will not permit me to go into this question, but there is evidently in the cord itself a nervous organisation which can produce coördinated movements reflexly on stimulating the skin or the posterior spinal roots, but whether the coördination is the same as that occurring in voluntary movements it is difficult to say. I should mention that Professor Gad[38] was the first to ascribe to the posterior cornual ganglion cells in the frog the function of connecting together the cells for the flexors of the ankle, the knee, and the hip.

The representation of movements in the excitable area of the cortex cerebri next claims our attention. Time will not permit me to enumerate the various observers from the pioneers—Hitzig and Ferrier—to the present day, nor is it my intention to discuss the much vexed question whether the so-called motor, or, as it is better to call them, the excitable areas, of the cortex are motor, sensori-motor, or sensory. But that they depend on sensory impressions for the power of exciting movements is shown by the remarkable observations of Mott and Sherrington[39] who found that after dividing all the *posterior* spinal roots of the brachial enlargement of the cord the voluntary movement of grasping by the hand was permanently lost, while movements of the limb could be elicited with apparently normal facility by electrical stimulation of the part of the cortex where the movements of the upper limb are represented.

I wish particularly to refer to the results obtained by Sir Victor Horsley and myself on stimulation of the excitable cortex in the monkey[40] and the orang.[41] In the monkey we examined every two square millimetres of the excitable cortex, and we found in certain squares where the upper limb was represented that the coördinated movements of flexion of the fingers and thumb, extension of the wrist, and flexion of the elbow was obtained, and though flexion of the fingers and flexion of the wrist were also obtained in other parts of the cortex flexion of the thumb and fingers and extension of the wrist were much more frequently the rule. Another coördinated movement which was obtained was that of opening the eyes and simultaneous turning of the head and eyes to the opposite side, a combination described previously by Ferrier. The movements obtained from stimulating the excitable area of the cortex are always coördinated movements and never those of single muscles unless a movement was performed by a single muscle. The frequent association of the extensors of the wrist with the flexors of the fingers was sufficiently frequent to warrant the opinion that a synergic association existed between those two sets of muscles. The results which Sir Victor Horsley and myself obtained from our experiment of stimulating experimentally the cortex in the orang 13 years ago have been in the main confirmed by the more extensive researches of Sherrington and Grünbaum[42] who have added to the number of movements which we had found to be represented in the excitable cortex. In the one case which we examined the representation of movements was found chiefly in the ascending frontal convolution, but we also obtained movements of the index finger, of the thumb, of the orbicularis oris, of elevation of the upper lip, and of pouting of both lips from stimulation of the ascending parietal convolution. Sherrington and Grünbaum, however, failed to get any evidence that any movement was represented in the ascending

[31] Proceedings of the Royal Society, 1886, vol. i.
[32] Schäfer's Text-book of Physiology, vol. ii., p. 795.
[33] Philosophical Transactions of the Royal Society, 1897, vol. clxxxviii., B.
[34] Ibid., 1898, vol. cxc., B.
[35] Ibid.
[36] Schäfer's Text-book of Physiology, p. 816.
[37] Schäfer's Text-book, vol. ii., p. 804.
[38] Festschrift der Med. Facult., Würzburg, 1882.
[39] Proceedings of the Royal Society, 1895, vol. lvii.
[40] Philosophical Transactions, vol. clxxviii., B; 1887; and vol. clxxix., B, 1888.
[41] Ibid., vol. clxxxi., B, 1890.
[42] Proceedings of the Royal Society, vol. lxix.

parietal convolution. In the orang the movements that we obtained were nearly always single movements, such as flexion of the elbow, flexion or extension of the thumb, and they differed from those obtained in the monkey in that the sequence of movements occurring from stimulating one spot which Dr. Hughlings Jackson has termed the "march" was rarely obtained. The best example of this sequence of movements which we obtained in the orang was the movement of opening the eyes, followed by that of turning the eyes to the opposite side and ending with the movement of turning the head to that side. Professor Sherrington has been good enough to inform me that they did obtain in the experiments sequence of movements, including the combination of flexion of the fingers and thumb with extension of the wrist, and though they agree with us that the representation of the movements in the excitable cortex of the anthropoid apes is much more differentiated than in that of the monkey, they did obtain evidence of the representation there of such coördinated movements as that of grasping. The coördinated representation of muscles for a definite movement which was found to exist in the excitable cortex of the monkey is also found in the internal capsule according to the investigations by Sir Victor Horsley and myself.[43] In these experiments the internal capsule was cut across horizontally and every square millimetre of its fibres was stimulated electrically. In almost every one of the experiments—which were 45 in number—the movements were obtained from one square of flexion of the thumb and fingers and extension of the wrist and frequently flexion of the elbow and adduction of the shoulder. The association between the flexion of the thumb and fingers and the extension of the wrists was most marked and occurs so often that the association must be for a synergic purpose. The association between the flexors of the fingers and the extensors of the wrist has been well shown by some interesting experiments by Hering,[44] who stimulated electrically the cortex in the monkey about one millimetre above the angle of the precentral sulcus, where Ferrier and Horsley and Schäfer had produced the movements of closing the hand into a fist and where Sir Victor Horsley and myself[45] had found flexion of the fingers and extension of the wrist. Hering first stimulated this part and produced the characteristic closure of the fist. He then cut through the tendons of the extensores carpi radialis longus et brevis and he then obtained not only flexion of the fingers but also flexion of the wrist owing to the absence of the synergic action of the extensores carpi radiales. Also, when in place of dividing the tendons of the extensors of the wrist he divided the tendons of the flexors of the fingers the wrist was extended, but the fingers were not flexed when the same part of the cortex was stimulated. Hering also performed the same experiment and got the same results by stimulation on the horizontally cut surface of the internal capsule, the fibres of which we had found to give flexion of the fingers and thumb and extension of the wrist. These experiments are very strong evidence that coördination of synergic movements take place in the excitable area of the cortex.

We have now considered the question of representation of the ultimate components of a movement in the spinal cord and in the excitable cortex. What, then, is the relation between these two parts of the nervous system? We have seen that there is in the grey matter of the spinal cord a mechanism by which on stimulation of the posterior root fibres a series of coördinated movements are produced and that it is also possible in the excitable cortex to produce coördinated synergic movements. The questions are: Does the coördination of the simple voluntary movements take place in the spinal cord or in the excitable cerebral cortex only? if in the cord, is there a mechanism there which is put into action by an impulse from the excitable cortex travelling down the pyramidal tract? if there be a mechanism in the cord for receiving cortical impulses, is it identical with that for receiving reflex impulses from the skin for the production of reflex actions? lastly, if all the coördination of simple movements takes place in the excitable cortex—between which and the muscles there is no intermediate coördinating station—then is the mechanism in the spinal cord used solely for reflex actions? In speaking of the relation between the representation of simple movements in the cord and in the cortex I would ask: Can all the reflex movements which can be elicited by stimulation of the posterior roots or of the skin be reproduced voluntarily? It is well known that certain reflexes, such as coughing, can be performed voluntarily and can be inhibited and prevented from taking place, while others, like sneezing, cannot be voluntarily performed and cannot be inhibited, but with regard to the skin reflexes I do not know that the question has been raised and it occurred to me to try to reproduce them voluntarily. The plantar reflex can, I think, be reproduced voluntarily, though I am not sure that the order in which the muscles contract can be exactly imitated. The cremasteric cannot be reproduced voluntarily. The abdominal and epigastric reflexes in which the middle line with the umbilicus is drawn to one side reflexly by scratching with a quill pen along the side of the abdomen I was surprised to find that it was quite impossible to reproduce voluntarily.

My time is too short to go into the question whether some of these superficial reflexes are spinal or cerebral[46] in origin and why they are frequently lost in hemiplegia, but assuming that they are spinal we have coördinated movements produced reflexly by stimulating the skin and which cannot ordinarily be reproduced by voluntary effort. The fact that an ordinary individual is not able to reproduce voluntarily the particular coördination which can be elicited as a cutaneous reflex would mean either that this particular coördination was represented in the cord but was not represented also in the excitable cortex, or that if the movements obtained by exciting the cortex were also represented in the spinal cord the mechanism by which these movements were coördinated is not the same as that by which the cutaneous reflexes were brought about. At present I do not think that we are in the position to answer this question whether these reflexes are of cerebral or spinal origin, and in view of the inability to reproduce voluntarily all the cutaneous reflexes the question will have to be worked out, supposing that the movements obtained by stimulating the cortex are also coördinated in the spinal cord, whether the mechanism in the cord used for cortical impulses is identical with that used for coördinating the movements obtained reflexly by irritating the skin.

I will now pass to the relation of the excitable cortex with the coördination of simple movements. The relation of the excitable cortex to the coördination of simple movements has been discussed by various authors, but the time at my disposal will not allow me to go into the history of the subject. As some authors have raised the question whether single muscles can be put into action by a cortical pyramidal cell I may say at once that this is a condition which I believe never occurs except there be a movement in which only one muscle takes part. The results obtained by stimulation experiments and also by clinical observation of epileptic attacks and of hemiplegia due to lesions of the cortex or of the internal capsule are all in favour of the view that movements and not single muscles are represented in the arrangement of the cortical cells and of the fibres forming the internal capsule. This is the doctrine taught by Dr. Hughlings Jackson. As I therefore consider that only coördinated movements are represented in the excitable cortex I will give in illustration of this view a case which I have lately seen at the Marylebone Infirmary through the kindness of Mr. J. R. Lunn. It was that of a man with recent hemiplegia—and here in passing I would remark that I do not think much can be learnt with regard to coördination from old cases of hemiplegia who have recovered one or two movements but in whom there are probably secondary changes in the spinal cord. In describing this case I would remind you of what I said in a previous lecture, that in strong movements of grasping the prime movers are the flexors of the thumb and fingers, the synergic muscles, the extensors of the carpus, and the fixation muscles, the triceps, followed by the biceps. The case was a patient suffering from hemiplegia in whom, contrary to the usual course, the return of power had commenced in the hand, and he could perform the movement of grasping, but he had no power to extend the wrist or to flex or to extend the elbow. On getting this patient to grasp with his full strength I noted that in addition to the contraction of the flexors of the thumb and fingers there was a contraction of the synergic muscles of extending the carpus and of the fixation muscle, the triceps, and that the action of the triceps was not felt to contract till a certain strength of

[43] Philosophical Transactions, 1890.
[44] Archiv für Physiologie, 1898.
[45] Philosophical Transactions, 1887.

[46] Schiff: Archiv für Experimentelle Pathologie und Pharmacologie, Band iii., 1874.

grasp was reached. The important point is that the patient had not the slightest power to contract the extensors of the carpus when he was told to perform the movement of extending the wrist or of the triceps when he was told to extend the elbow. In this case where the lesion was probably in the internal capsule, the only fibres which were available for impulses emanating from the "arm-centre" of the cortex were those coming from that part, where the movements of grasping were coördinated, whereas the fibres conducting impulses emanating from the part of the cortex where extension of the wrist and extension of the elbow were represented were unable to pass. In other words, the patient could put into action the extensores carpi and the triceps when they form part of the movement of grasping, but he could not make either of them contract as prime movers in extension of the wrist or elbow. The next point is, Is the link between these three sets of muscles in the cord or in the cortex? Starting from the muscles and following up the motor nerves, where is the first station where the arrangement of cells is to be found by which these three sets of muscles work together? Is it in the spinal cord or in the cortex? If it be in the cortex it would mean that there must be three sets of cells which would be coördinated to act together for this purpose; it would also mean that there must be separate cells for the movements of the extensors of the wrist and of the elbow for their action as prime movers and separate cells for all the different combinations. Though the cortex might be large enough to contain all these cells it would be impossible to find room in the internal capsule and much less in the pyramidal tract for all the fibres that would be required. On the other hand, these three sets of muscles might be joined together under the guidance of cells in the posterior cornu and the combination would be thrown into action by one impulse from the cortex. I think that the question is best approached by examining what takes place in the movement of lateral deviation of the eyes. If the cortex in the angle of the præcentral sulcus of, let us say, the left side be stimulated, both eyes move conjugately to the right, and if the particular fibres of the left internal capsule be stimulated the same effect is produced and conversely if the cortex or the capsule be paralysed the eyes deviate to the left. These fibres passing through the left internal capsule and the crus cerebri cross to the opposite side to the nucleus of the right sixth nerve, whence fibres pass over to the part of the left third nucleus, or third nerve, which presides over the left internal rectus muscle. In this case the link between the right external rectus and the left internal rectus takes place in the medulla in the sixth nucleus, as suggested by Foville. The proof of this is that in lesions of the right sixth nucleus, without involving the third nuclei or the pyramidal tract, the same conjugate paralysis of the eyes, with deviation to the left, is produced as from a lesion of the left cortex. Now, although these two muscles, the external and internal recti, are on opposite sides of the body this conjugate movement of the eyes is as much a unilateral movement[47] as that of closing the fist, for the reason that on stimulation of the left cortex the eyes turn always to the right and not to the left. I think therefore that we are justified in inferring that the principle which underlies the simple movement of turning the eyes to the right can also be applied to the simple movement of closing the fist and that the link between the three sets of muscles, the flexors of the fingers and thumb, the extensors of the carpus, and the triceps, takes place somewhere below the level of the internal capsule and by analogy in the spinal cord.

It has been shown by von Monakow[48] and by Schäfer[49] that the ending of the fibres of the pyramidal tract is in the neighbourhood of the posterior horns and not in the anterior horns, as was formerly thought to be the case. Von Monakow also thinks that there are intermediate cells between the anterior cornual cell and the ending of the pyramidal fibre and that this cell has the power to bring out associated movements. It therefore seems probable that the coördination or the link between the muscles entering into a simple movement takes place in the cells of the posterior cornua which are put into action by impulses coming down the pyramidal tract from the excitable cortex where these movements are represented. Whether the same coördinating mechanism in the spinal cord is used alike for reflex actions as well as for cortical impulses or whether there is a separate mechanism for each I do not think, as I said before, that we can give a certain answer. Now, as the most complicated and intricate muscular performances are only an arrangement of simple movements in some particular order it is probable that in learning some new combination of movements, such as playing the violin, fencing, or golfing, the simple movements represented in the excitable cortex are in response to visual or auditory impressions brought into action in their proper combination and sequence. Later the combination learnt with difficulty becomes by frequent practice automatic. But as these learnt combinations, or even such an elementary combination as walking, becomes automatic, there does not seem to me to be sufficient evidence that their seat of coördination is transferred from the brain to the spinal cord for the reason that if there ensues a lesion of the cortex or of the internal capsule all these so-called automatic movements are lost.

In conclusion, I would like to make some remarks about the question of representation of movements of the body of the same side as the cortex stimulated, or, in other words, if the—let us say—left cortex is stimulated what movements, if any, are produced in the left arm and leg. I do not propose to go into the question of the representation in one hemisphere of such bilateral movements as pouting of the lips, mastication, and adduction of the vocal cords. Sir Victor Horsley and myself discussed this question in our paper on the Internal Capsule[50] and the matter has been exhaustively dealt with by Sir Victor Horsley and Professor F. Gotch in their Croonian Lecture before the Royal Society.[51] The question is rather to find out what movements, if any, are produced on the same side as the cortex stimulated and the strength of current which is required to evoke these movements. The subject has been referred to by the various authors. Hitzig[52] in his first memorial remarked that if the currents were feeble their action was localised on the muscles of the opposite side of the body, but if stronger the muscles on the same side of the body were put into action. François-Franck,[53] experimenting on cats and dogs, found that weak currents produced movements of the opposite anterior limb, and if the current be stronger movements of the anterior limb of the same side are produced, but after those of the opposite side. He also found that the movements persisted on the two sides in spite of removal of the opposite cerebral cortex, of section of the white matter of the centrum ovale, of division of the corpus callosum, of median section of the bulb, or after section of one half of the cord on the same side as the cortex stimulated. He therefore considered that the movements are not caused by impulses conveyed from one hemisphere to the other and he came to the conclusion that the association between the two sides can only take place in the spinal cord by the transverse commissures. According to Unverricht[54] in dogs when the motor cortex of one side—let us say the left—was stimulated epilepsy was produced on the right side and also on the left side. He also obtained convulsions on both sides when unilateral cortical extirpation or hemisection of the cord was performed, and this is, he considers, a proof that the convulsions on the same side only arise by centrifugal excitation in the spinal cord itself. But after double-sided cortical extirpation it is not possible to produce clonic contractions.

As I believe that no observations of this nature have been made on monkeys I have made some researches with Sir Victor Horsley who was good enough to perform the operation of electrically stimulating under ether the motor cortex in monkeys. There were done in all four experiments and the general results that we obtained were as follows. 1. On stimulating the cortical "arm centre" by faradisation with the bipolar method when there was 16-8 centimetres distance between the coils the first movement was in the arm of the opposite side. 2. On increasing the current by diminishing the distance between the coils to about six cubic centimetres movement was obtained in the arm on the same side as that stimulated. 3. The

[47] Philosophical Transactions of the Royal Society, 1890, B, p. 73.
[48] Archiv für Psych., 1895, Band xxvii.
[49] Proceedings of the Physiological Society, Journal of Physiology, 1899, vol. xxiv.
[50] Philosophical Transactions of the Royal Society, B., 1890.
[51] Ibid., 1891.
[52] Du-Bois Reymond's Archiv, 1870.
[53] Leçons sur les Fonctions Motrices du Cerveau, Paris, 1887.
[54] Volkmann's Klin. Vortr. Innere Medicin, No. 56-78, 1897-1900.

character of the movement on the same side was usually identical with that evoked on the opposite side, but in one case where the movement began with extension of the fingers it was followed on the same side by adduction of the shoulder. 4. When the cortical "leg centre" was stimulated the movements on the same side appeared rather sooner than in the case of the arm and in some cases as weak a current with the coils at 12 centimetres apart produced movements in the leg of the same side. 5. Epilepsy was obtained in all the cases in the arm of the opposite side, in three cases it was not obtained on the arm of the same side even to the coil at four centimetres, and in two out of the three cases that it was looked for in the lower limb epilepsy occurred on the same side. The first movement of the epilepsy on the same side was the same as that obtained on the opposite side. 6. On removing the excitable cortex from one hemisphere and stimulating the cortex of the other side, in two of the cases no movements were obtained on the same side as that of the cortex stimulated. In one experiment where movements of interosseal flexion of the fingers, flexion of the wrist, and pronation were obtained the most frequent movement was slow flexion of the fingers under deep narcosis, but under slighter narcosis the movements were the same as on the opposite side. In another experiment the only movement obtained on the same side was slow flexion of the elbow, whether the stimulation was applied to the "arm centre" or to the "leg centre." Also in this animal when the internal capsule was exposed and stimulated very slow flexion of the elbow was obtained on the same side when extension of the wrist and flexion of the fingers were obtained on the side opposite to the stimulated capsule; also very slight extension of the hip and knee were obtained on the same side when marked extension of the toes and flexion of the thigh and knee were obtained on the opposite side. 7. No epilepsy was obtained on the same side as the cortex stimulated when the opposite cortex was removed.

The above experiments are hardly sufficient in number to prove for certain whether the movements occurring on the same side of the body as the cortex stimulated are evoked from the opposite cortex by means of the corpus callosum or from the endings of the pyramidal tract through the commissural fibres of the spinal cord. In two of the cases after removing the left motor cortex there was no movement at all in the right arm on stimulating the right cortex, although there was marked movement in the whole of the left side and even in one case epilepsy. In another case the same movement—slow flexion of the elbow—was produced on the same side irrespectively of the place stimulated and in only one case was there any correspondence of movement between the two sides. On the whole the experiments, as far as they go, are in favour of the theory that in the monkey the movements obtained on the same side as the cortex stimulated are produced from the opposite cortex through the corpus callosum rather than through the commissural fibres of the spinal cord, and that epilepsy is not obtained in the same side of the body as the cortex stimulated if the opposite cortex be removed.

It now only remains to me to thank you, Sir, and those who have attended for their kind attention, and though I taken such a well-known subject as muscular movements I trust that I have brought forward facts which are new as well as true. I cannot conclude without expressing the hope that all students may be taught the muscles taking part in movements on the living person and not on the cadaver.

A BALL will be given on Wednesday, July 1st, at the Empress Rooms, Royal Palace Hotel, Kensington, in aid of the Oxygen Hospital, Fitzroy-square, W.

MEDICAL STUDENTS AND MADAME SARAH BERNHARDT.—On June 22nd Madame Bernhardt appeared at the Adelphi Theatre, Strand, London, W.C., in her rôle of "Marguerite Gautier," the heroine of the eternally attractive story of life and passion by Dumas *fils*. More than a month ago the gallery of the theatre had been reserved, we understand, for this night by Mr. Knox for a number of medical students of London; and this gentleman, after they had witnessed the play, presented a bouquet to Madame Bernhardt and delivered a complimentary speech in French. Madame Bernhardt complimented Mr. Knox upon the purity of his accent. It goes without saying that the students showed their admiration of the talented French actress in rather a demonstrative manner, but we know that that admiration was sincere.

ABSTRACT OF

The FitzPatrick Lectures

ON

THE HISTORY OF MEDICINE.

Delivered before the Royal College of Physicians of London on June 23rd and 25th, 1903,

BY JOSEPH FRANK PAYNE, M.D. OXON.,
FELLOW AND HARVEIAN LIBRARIAN.

LECTURE I.

Delivered on June 23rd.

MR. PRESIDENT AND GENTLEMEN,—It is right that before entering on the subject of these lectures I should in a few words explain the origin and aim of this new foundation. This lectureship owes its existence to the munificence of a lady, Mrs. FitzPatrick, who desires in this way to honour the memory of her late husband, Dr. FitzPatrick, Member of this College, a physician of great worth, learning, and accomplishments, and at the same time to promote an object which Dr. FitzPatrick himself had much at heart, the advancement of the study of medical history. This pious and generous gift deserves not only what have been gladly rendered, the most cordial thanks of our College, but due recognition from all who are interested in the progress of the two sciences, medicine and history, which it is designed to serve.

In assigning the History of Medicine as the subject of this lectureship the foundress has been guided by the wise advice of our eminent Fellow, Dr. Norman Moore, who was an intimate friend of our deceased Member. While, therefore, the warmest thanks of the College are due, and have been already expressed, to Mrs. FitzPatrick for her munificent gift, we must also recognise the great services of Dr. Norman Moore, to whom, it is understood, are due the conception of this scheme and the plan under which it is to be carried out. It may seem to many, as it seemed to myself, that he would most appropriately have filled the post of the first FitzPatrick lecturer. I would rather that he had been here instead of myself. It was only when I was assured that he, with generous self-abnegation, but decidedly, declined to be appointed that I felt justified in accepting the honourable task which the President and Censors have intrusted to me. I can only say that I will do my best.

It must be confessed, with some shame, that our own country has been, and is, behind most civilised nations in the bulk and value of its contributions to the history of medicine. Germany, France, and Italy have produced on this subject works both profound and brilliant which remain our standard authorities. The smaller countries, such as Holland and Switzerland, have not been behindhand, while our cousins across the Atlantic, the American physicians, are now displaying characteristic energy and zeal in the study of the antiquities of medicine. Compared with the interest shown and the positive results achieved in relation to medical history by the medical profession in all these countries our own countrymen have displayed, I fear, lamentable apathy and but little industry. In one department of the subject only, that is in medical biography, have we any important works to show; for the Roll of our College, as written by our late librarian, Dr. Munk, is certainly unequalled, if not almost unparalleled, in any foreign country. But in general it is true that while England is distinguished above other countries for the zeal with which her political, social, and literary history has been investigated and particularly for the unrivalled series of records and memorials which have been collected for these investigations, the history of science generally, and especially of medicine and of medical institutions, has been conspicuously neglected. I do not forget the excellent work which has been done of late years in connexion with the history of our great Colleges of Physicians and Surgeons and in relation to the history of our Universities. But it is remarkable that while we have done little for the history of medicine in general we have done relatively almost less for the history of medicine in our own country. The history of medicine in Britain, it is not too much to say, remains to be

written. If in the standard histories of medicine, chiefly German and partly French, we may sometimes think that the history of British medicine is inadequately represented, this is not the fault of the historians. It is our fault for not having supplied them with adequate materials.

The foundation which is this day inaugurated is the first attempt to have the history of medicine taught or expounded in this country. In considering therefore what department of the vast field of medical history could be advantageously treated within the narrow limits of these two lectures, it seemed best to begin with that part which has been most neglected, the history of medicine in our own country. The range of the inquiry cannot be wide. It is limited no less by the powers and knowledge of the lecturer than by the short time at his disposal. It would be impossible to cover more than a small period of history, and that imperfectly. But if we were to attempt, however inadequately, to lay something like the first stone of the history of English medicine—to make a rough beginning which, it is to be hoped, may be revised and corrected, as well as continued, by other and better equipped investigators—this attempt, humble as it is, may be not without fruit. And the words English medicine, which it seems necessary to employ, imply a still further limitation. There was, no doubt, in all the Celtic countries a traditional popular medicine which had little or nothing to do with the subject of these lectures. In Ireland there was in early times what may be called a learned medicine also. In Wales there seems to have been something like an organised medical profession. But with Celtic medical history the lecturer is totally incompetent to deal, even in the most superficial way. It remains, then, to begin with the earliest record of the English people settled in England, our Anglo-Saxon ancestors, and to try to form for ourselves some idea of what medical science and medical practice meant in those early times. It is there that we find the actual beginning of English medicine.

Now although the history of medicine among the Anglo-Saxons has never been written from a medical point of view, a large amount of material has been collected by the labours of non-medical scholars. During the past generation nearly all, if not the whole, of Anglo-Saxon literature bearing on science and medicine has been collected and translated into modern English by a succession of learned and laborious inquirers. It is to such men as Mr. Thomas Wright, the Rev. Oswald Cockayne, the editors of the Early English Text series, Professor Earle, and others, not forgetting the important contributions made by German philologists, that we owe these important materials for medical history. The following sketch of medicine in Anglo-Saxon times is entirely based upon the labours of these eminent men. And, indeed, to one quite unacquainted, as the lecturer is, with the early English or Anglo-Saxon tongue, it could not be otherwise.

The beginning of Anglo-Saxon civilisation and learning must be dated from the introduction of Christianity into Saxon England by Augustine in A.D. 597. This must also be taken as the beginning of Anglo-Saxon medicine. For though there are some vestiges of earlier popular medical beliefs based on the heathen mythology they are comparatively scanty and unimportant. Whether the Christian missionaries from Rome introduced into England, as modern missionaries often do into heathen countries, some of the medical lore and practice with which they were familiar—that is, the medicine of the Latin world—it is very difficult to say. The earliest hint of anything like medical teaching in England is in connexion with the school at Canterbury founded by Archbishop Theodore in the latter half of the seventh century, about 670. Theodore was a Greek monk from Tarsus who with a learned colleague, the Abbot Adrian, taught both Greek and Latin with such success that many of his pupils, Bede says, knew both the ancient tongues as well as their own. This proficiency in Greek may have had some importance in the study of medicine; but the question is a difficult one. The only evidence that some medical lore was taught at Canterbury rests upon an authentic story told by Bede of one of Theodore's pupils, John of Beverley, afterwards Bishop of York. This divine (who had a reputation for working miracles) being called in to visit a nun, in whom bleeding had been followed by dangerous symptoms, found that she had been bled on an improper day. He severely rebuked those who had ordered the bleeding and quoted some cautions on the subject which had been taught him by his master, Archbishop Theodore. This is an isolated fact, but it shows that learned men among the Anglo-Saxons had some pretentions to medical knowledge and imparted it to their pupils. It is not clear that this was true of the greatest name in the Anglo-Saxon church, the Venerable Bede (died 735) whose learning was as remarkable as his piety and zeal. Bede wrote beside theological and historical works some scientific treatises "On the Nature of Things," and "On Times," or seasons, dealing chiefly with astronomy and meteorology. There is nothing distinctly medical in his known writings, but a manuscript fragment in the British Museum of later date and doubtful authenticity contains certain rules as to the dangerous days for bleeding which are attributed to him. This fragment is so late as to have no authority, but the fact that it refers to a subject which Bede's episcopal predecessors, Theodore and John of Beverley, thought of great importance, and one not unconnected with the subject of his known works, gives it some plausibility. In Bede's writings there are references to "leeches" or physicians, showing that there was something like a regular medical profession.

After this the only documents bearing on medicine in England belong to the kingdom of the West Saxons and the first date of any importance relating to medicine is that of King Alfred the Great (848–901). This great ruler, who took as much pains to educate his people as to give them laws or to make them successful in war, translated himself and caused to be translated from the Latin into English, books of history and philosophy; but nothing bearing directly on medicine. By this, however, he set the example which was afterwards followed in the translation of purely medical works into the vernacular. He kept up relations with Italy and the East even as far as India, by which books of all kinds, probably some medical, were brought into England. It appears from an Anglo-Saxon MS. that the patriarch Helias of Jerusalem sent to Alfred from the Holy Land medical prescriptions relating to such drugs as scammony, tragacanth, and others, the produce of Syria, and also the celebrated Greek compound medicine, the "Theriaca of Andromachus," or "Triacle," which could not have been made in England. This shows some interest on Alfred's part in the progress of medicine.

Soon after the death of Alfred is the date of the most important Anglo-Saxon medical work which has been preserved. It is a "Leech Book," or Treatise on Medicine in two books. A third book which is appended evidently does not belong to it. By an inscription at the end we learn that it was the property of one Bald who ordered one Cild to write it. The presumption is that Bald was a "leech" or physician and that Cild was the writer, but whether the writer was merely the scribe or the author—that is, compiler—is not quite clear. This book is a sort of treatise on diseases, beginning with the head and going down to the feet, as was the custom of the later Greek physicians and almost universally followed in the Middle Ages. Many diseases are mentioned, but the account of their pathology and symptoms is very meagre. The most important passages bearing on these subjects—making, according to the editor, Mr. Cockayne, perhaps one-fourth of the book—are borrowed without acknowledgment from later Greek physicians, especially from Alexander Trallianus and in a few cases from Paulus Ægineta. The question naturally arises whether the Anglo-Saxon compiler read these authors in the Greek or in a Latin version. For various reasons which it would take too long to enumerate it is probable that the latter supposition is correct. Some late Latin writers, such as Marcellus Empiricus and Plinius Valerianus, were also laid under contribution, though none of these authors, Greek or Latin, are named except Pliny. In the book two Anglo-Saxon leeches, Dun and Oxa, are mentioned and reference is made to "the leeches" generally, so that it supplies evidence of the existence of a regular medical profession. The patriarch Helias is the only other person quoted.

The treatment of disease is generally spoken of at greater length than the signs and symptoms. Many prescriptions are borrowed from the Greek physicians but many cannot be thus traced. A conspicuous feature is the great abundance of herbal medicines prescribed. The Anglo-Saxons were acquainted with a large number of native herbs—a knowledge which could not have been acquired from their Greek authorities—and used them empirically along with some exotic drugs. Their pharmaceutical methods were exceedingly simple, herbs being boiled in water or soaked in beer, vinegar, or milk, and sometimes mingled with honey. Ointments were made with butter. The surgery of the "Leech Book" is extremely rude. Wounds were treated

with decoctions or poultices of herbs and with honey. For broken bones similar applications were to be used and the limb was to be wrapped in softened elm bark. In one place a splint is spoken of. Amputation is advised only for gangrenous limbs, but no details are given as to the method of performing it. An operation for hare-lip is described but hardly in such a way as to show that the writer had actually performed it. Blood was taken by venesection, cupping, and scarifications. Various kinds of baths are recommended and carefully described. Beside these methods of treatment the "Leech Book" contains a number of charms, incantations, and magical rites, but not so many as some others of the Anglo-Saxon works. The discussion of this subject is deferred.

The "Leech Book" of Bald is found in one manuscript of the British Museum and has been printed in the collection called "Anglo-Saxon Leechdoms" (Vol. II.), edited by the Rev. O Cockayne and published in the "Master of the Rolls Series." The general impression derived from this book, which is the only example of the professional manual of the Anglo-Saxon leech, is that it shows little or no originality but a praiseworthy zeal in trying to obtain the best available knowledge on the subject, new or old, English or foreign. There is nothing in any continental literature of the same period or for some time later at all comparable to it. Indeed, out of Italy there was hardly any scientific literature and none at all in any vernacular language. In this respect the medical literature of the Anglo-Saxons was as much without a rival as their general literature. The misfortune was that this compilation was made when the level of European medicine was at its very lowest. The works of the ancients were mostly inaccessible and nothing else had arisen to take their place. The school of Salerno, the oldest medical school in Europe, had not yet come into prominence.

The next important book which requires notice is the Anglo-Saxon translation of what is known as the Herbarium of Apuleius, a book of medical botany, illustrated with coloured figures. Of this translation no less than four manuscripts have survived, a remarkable number considering the scanty remains of Anglo-Saxon literature which exist and showing that the book enjoyed great popularity. The most remarkable manuscript is one in the British Museum which must originally have been a magnificent book decorated with coloured drawings. It is believed to have been written between 1000 and 1050 A.D. From this and other manuscripts the text has been printed in the Rolls series, edited by Mr. Cockayne with a version in modern English as Vol. I. of "Anglo-Saxon Leechdoms." The original work is in Latin and is attributed to a possibly fictitious writer called Apuleius Platonicus. It is believed to date originally from about the fifth century, but no copy anything like so old as this is known. It was for centuries the most popular botanical book in Europe, being multiplied in numerous Latin manuscripts up to the fifteenth century when it was first printed. Associated with this book in a large number of Latin manuscripts, as in theAnglo-Saxon version, are three other short Latin treatises, one on the plant Vettonica or Betony, attributed, probably falsely, to Antonius Musa, the physician to the Emperor Augustus. There are also a series of descriptions of medical plants, professedly taken from Dioscorides, and a treatise on medicines obtained from animals bearing the name of Sextus Placitus, a Roman physician of the fourth century, all with coloured figures. Who first united these four books in one collection is not known, but taken together they formed a sort of compendium of medical natural history. The essential feature in all of them was the series of illustrations which, as the actual descriptions of the objects are few and meagre, served, or were intended to serve, for the identification of the plants and animals named by the original writers. A large number of Greek and Latin synonyms are given for most of the plants and an enumeration of the diseases for which they were supposed to be useful. All this constitutes, according to our ideas, a very poor book, whether from the botanical or medical point of view. The accounts of medical uses are meagre and often trivial. Even the illustrations, having been handed down by a long succession of copyists, with ever-increasing remoteness from the original objects, are conventional in drawing and often quite unrecognisable in their present form, whatever they may have been in the original. The whole bears no comparison with the genuine work of Dioscorides on "Materia Medica" which is the great treasury of ancient science relating to the natural history and uses of drugs. Nevertheless, the Anglo-Saxons showed their usual intelligence and zeal for knowledge in translating it. It was the best book on the subject they could find, they turned it into their own vernacular tongue and carefully copied the precious illustrations by which they, no doubt, hoped to identify the plants of their own woods and fields and thus to find the key to their virtues and uses as understood by the ancients. This was a distinct step towards the advancement of botany in England, a definite scientific achievement, and as such without a parallel then, or for some time after, in any other European country.

With regard to the coloured figures of plants which occur in the Anglo-Saxon manuscripts, and most conspicuously in that splendid book already spoken of, a few words must be said. It may cause surprise and be thought a fault that the artists did not supply original figures of the plants described. Anglo-Saxon art, which had reached so high a level in decoration and showed considerable skill in drawing the human figure, might be thought to have been equal to this task. But to supply new figures would not have carried out the object which they had in view, which was identification. The artists therefore contented themselves with copying the traditional figures which had already passed through the hands of many generations of copyists. Rude as these figures are, they represent a real survival of old Græco-Roman art and even in their most degraded form preserve some of the features characteristic of classical art in general. The figures are usually nearly symmetrical on both sides and show a sense of balance and proportion which may be fairly regarded as classical. Also they are not so much portraits of individual plants as diagrams constructed from a general knowledge of the object. If we compare the series of figures in the various manuscripts we find them for the most part the same, though with occasional varieties, the figures of the same plant in different manuscripts being sometimes quite unlike. The temptation was for a clever artist to treat the figure from a decorative point of view rather than as a mere transcript from nature. Occasionally he allowed his imagination free play and produced figures which are plainly fabulous. These features are clearly seen in some copies now exhibited of the drawings in the manuscripts.

This seems to be the opportunity to say something about the botanical knowledge of the Anglo-Saxons generally. It must not be supposed that they derived their knowledge of their native plants from Latin and Greek sources. A large number of medicinal herbs are named in the various prescriptions of the Leechdoms which are not included in the translated Herbals. We have another source of knowledge in the "glossaries" which give the Anglo-Saxon equivalents for Latin and Greek names of plants. Of these glossaries no less than six written before the middle of the twelfth century, which may be taken as the extreme limit of Anglo-Saxon literature, have been preserved. They show the keen interest which our forefathers took in the knowledge of herbs. From these and other sources Mr. Cockayne has compiled an exhaustive list of the Anglo-Saxon names of worts and trees amounting in all to between 700 and 800. Omitting all mere transcriptions of Latin names, synonyms, and some names which do not strictly belong to the period now considered about 500 remain which are either pure English names or Latin and Greek words so altered as to have become vernacular. This is a very large number. The Herbarium of Apuleius with the additions from Dioscorides gives only 185 names and of these some were exotic plants which the Anglo-Saxons could not identify. Evidently, then, a large surplus remains which represents an original English nomenclature of native plants. That the Anglo-Saxons had 5 0 botanical names would not necessarily show that they knew 500 species, for some may have been inaccurate or synonymous, but it is evidence of a much more extensive knowledge of botany than they have been generally credited with. Indeed, this science seems to have stood at a higher level in those days than in mediæval times when little was added except some French names and much was forgotten. On the whole we must agree with the hard saying of Professor Earle that "there was a great decadence of botanical knowledge in England between the eleventh and the sixteenth centuries."

In the next lecture some other books of the Anglo-Saxon medical library will be considered and also the charms and magical rites which occur in many of them.

ON THE DIAGNOSIS OF THE CAUSE OF JAUNDICE.[1]

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OBSTRUCTION in the common bile-duct leads to absorption of bile from the biliary passages and consequent jaundice. This form of jaundice has been termed "obstructive"; and on the assumption that obstruction giving rise to jaundice could only occur in the common duct, all cases of jaundice in which there was no obstruction in the common duct have been termed "non-obstructive." It has, however, been shown that a catarrhal condition of the lining membrane of the small intrahepatic ducts may also produce jaundice which is as much "obstructive" as that produced by obstruction in the common duct. Indeed, most cases of jaundice (if not all) appear to be "obstructive," the obstruction in some being in the small intrahepatic ducts, in others in the common bile-duct, and if the terms "obstructive" and "non-obstructive" are still used in cases of jaundice it must be with the understanding that they refer only to the presence or absence of obstruction in the common bile-duct.

Whatever terms are used the first step in the diagnosis is to determine whether or not there is obstruction in the common bile-duct. Such obstruction is shown by (1) absence of bile from the stools; (2) enlargement of the gall-bladder; and (3) enlargement of the liver.

1. Absence of bile from the stools is the most trustworthy; the other two conditions are confirmatory signs. When the stools are white in cases of jaundice the common bile-duct is obstructed. When they are not white there is no such obstruction. Walker[2] points out that the motions may become colourless from defective pancreatic secretion; in these cases, however, there is no jaundice.

2. Enlargement of the gall-bladder arises from its distension when the common duct is occluded. It may be too slight to be detected at first, but in long-standing cases and where the occlusion is complete it may become enormous and generally can readily be felt through the abdominal wall.

3. Enlargement of the liver arises whenever the exit of secreted bile is prevented. The amount of enlargement varies with the duration of the obstruction and in different individuals. It may appear to be greater than it really is from pushing forwards of the liver by the distended gall-bladder. The enlargement may be so great that doubt may arise as to whether it is not due to primary disease of the liver, but if the surface of the organ is smooth and no nodules can be felt in its substance no degree of enlargement need deter us from regarding it as due to, and confirmatory of, obstruction of the common duct.

The causes of obstruction in the common duct giving rise to jaundice are—1. Morbid conditions involving the duct or its orifice in the duodenum: (*a*) catarrh; (*b*) duodenal ulcer; (*c*) duodenal cancer; and (*d*) stricture of the duct. 2. Foreign bodies in the common duct: biliary calculi, pancreatic calculi, and parasitic structures. 3. Pressure on the duct from without: (*a*) by perihepatitis and resulting adhesions; (*b*) by tumours, aneurysms, or enlarged glands in the portal fissure; and (*c*) by disease of the pancreas.

Jaundice from catarrhal obstruction of the common bile-duct.—Catarrh involving the orifice of the bile-duct in the duodenum prevents bile from flowing into the intestine and jaundice results. When jaundice comes on rapidly with white stools, with slight enlargement and tenderness of the gall-bladder and liver, but without pain or ascites, the probability is that the jaundice is due to catarrh, especially if there have been precedent symptoms of gastro-duodenal indigestion (nausea, flatulence, &c.), with or without evidences of rheumatism, gout, or secondary syphilis. The diagnosis of catarrhal jaundice is not based on any special distinctive symptom but rather on the known frequency of its occurrence, together with absence of evidence of any other condition which could produce jaundice. Catarrhal jaundice rarely lasts more than five or six weeks, but during this time the gall-bladder may become considerably distended and the patient may become very deeply jaundiced and emaciated. If the jaundice does not commence to lessen after the lapse of five or six weeks and bile to reappear in the stools, the diagnosis of simple catarrh must be abandoned, the probability being that some more serious condition, such as disease of the pancreas, is present.

Jaundice from duodenal ulcer can only arise when the ulcer involves the opening of the common duct in the duodenum; it is therefore rare. Jaundice with white stools and no ascites, coming on after the patient has suffered for some time from epigastric pain and tenderness, with hæmatemesis or melæna, is ascribable to duodenal ulcer. (The same symptoms may result from cancer of the pancreas, but then the jaundice usually precedes any hæmorrhages and possibly the tumour of the pancreas can be felt.)

Jaundice from duodenal cancer.—If in addition to the symptoms of duodenal ulcer just enumerated, a tumour can be felt in the duodenal region, or if the lymphatic glands in the abdomen, neck, or elsewhere are enlarged, the jaundice is probably due to duodenal cancer. (Cancer of the head of the pancreas is even more difficult to exclude here than in the case of simple duodenal ulcer, but in cancer of the pancreas the jaundice usually precedes the melæna and there may be other evidences of pancreatic cancer such as will be described later.)

Stricture of the common bile-duct.—Jaundice coming on at birth with absence of bile from the stools is ascribable to congenital stricture of the duct, and is soon fatal. Acquired stricture of the duct is rare and seems most commonly to result from previous passage of gall-stones, but cases without any evidence of previous gall-stones have been recorded by George Johnson, T. Holmes, Moxon, and myself.[3] Jaundice can only be attributed to stricture of the common duct when all other possible causes can be excluded.

Jaundice from calculi or other foreign bodies in the common bile-duct.—When jaundice, with white stools and enlargement and tenderness of the gall-bladder and liver, comes on a few hours after a paroxysm of acute abdominal colic, with retching or vomiting, and may be pyrexia, such jaundice is usually due to a foreign body in the common bile-duct, and in the absence of evidence of hydatids of the liver such foreign body is presumably a biliary calculus. (A pancreatic calculus impacted at the orifice of the common bile-duct may produce almost identical symptoms though probably with less severe pain, as in the case by A. P. Gould, published in the Transactions of the Clinical Society of London for 1889.) Jaundice must not be ascribed to impacted gall-stone unless there has been an attack of colic *at some time*; for though a calculus may become impacted in the duct without an *immediately* preceding attack of pain, yet it is excessively rare for a stone to become so impacted unless calculi have entered the biliary passages and produced colic at some previous date—it may be long before. Jaundice must not be too readily attributed to gall-stones if the evidences of their existence occurred at some long previous date, for such jaundice may be due to cancer of the liver or pancreas, which are not infrequently preceded by calculi in the biliary ducts.

Jaundice from compression of the common duct by perihepatitis with adhesions.—Perihepatitis seldom occurs as a disease alone, but is met with in association with hepatitis (especially syphilitic hepatitis), with growths in the liver or portal fissure, with gall-stones in the biliary passages, or with gastric or duodenal ulcer. As the vena portæ as well as the duct may be compressed by the perihepatic bands, ascites is often produced as well as jaundice. When jaundice occurs without bile in the stools, but with ascites, paroxysmal attacks of local pain and pyrexia, together with evidences of some of the conditions above enumerated with which perihepatitis is usually associated, we are justified in attributing it to perihepatitis. When similar symptoms occur, but without ascites, the diagnosis is more difficult, the main difficulty being to decide whether the symptoms are due to gall-stones or to perihepatitis, for both give attacks of pyrexia, local pain, and jaundice with colourless stools. The more severe the attacks of pain and the more intense the jaundice, the greater the probability of calculi; but very often perihepatitis and gall-stones coexist and many of the symptoms met with in cases of gall-stones are due to associated perihepatitis.

[1] A lecture delivered at St. Mary's Hospital on Nov. 30th, 1902.
[2] Transactions of the Royal Medical and Chirurgical Society, vol. lxii., p. 287.
[3] Transactions of the Clinical Society of London, 1888.

The following cases exemplify the resemblance between the symptoms produced by perihepatitis and those producible by gall-stones.

CASE 1.—A married woman was admitted into St. Mary's Hospital in 1878 for enlargement of the liver; after that she was well till 1889 when she came to me as an out-patient with pain, jaundice, and colourless stools; she improved temporarily but came again into the hospital in August, 1890, with jaundice, colourless stools, and epigastric pain and tenderness. No enlargement of the liver could be detected. In October the abdomen was opened by Mr. A. J. Pepper; no gall-stones were found but the gall-bladder was shrunken and there were numerous tough perihepatic inflammatory bands. These were divided as far as was deemed prudent and she was greatly relieved. I saw her again in May, 1894, with large syphilitic nodes on the legs and occasional smarting pains in the liver region but no jaundice. Syphilis here seemed to have caused perihepatitis and jaundice simulating gall-stones, but there was never pain severe enough to be called "colic."

CASE 2.—The patient was a married woman, aged 46 years, who had for five years suffered from attacks of biliary colic and in February, 1900, she had severe rigors and high temperature, with deep jaundice, colourless stools, and pain in, and enlargement of, the gall-bladder. I saw her in June, 1900, with Mr. E. Moon and in July an incision over the gall-bladder was made by Mr. Pepper. We found the liver large and puckered, adherent to the stomach by inflammatory bands, and two calculi in the common bile-duct. Some of the adhesions were divided but there was a widespread matting of tissues around the duct, which it was not thought wise to interfere with, and the calculi were too firmly impacted to remove. The wound healed and the fever and pain soon subsided. The patient was greatly relieved by the division of the adhesions and eventually lost her jaundice.

Jaundice from compression of the bile-duct by tumours in the portal fissure.—Any tumour pressing on the common bile-duct sufficiently to occlude it will press also upon the adjacent vena portæ; hence in such cases there is always ascites as well as jaundice. If a tumour can be detected in the region of the portal fissure and there is ascites as well as jaundice, with colourless stools, there need be no hesitation in ascribing the jaundice to the presence of the tumour. When the same symptoms occur without any tumour being detectable, but nodules of carcinoma can be felt in the liver, we may infer that the jaundice results from pressure on the bile-duct by glands in the portal fissure, secondarily affected. The physician should never attribute jaundice with colourless stools, but without ascites, to cancer of the liver. Cancer of the liver does not itself press upon the bile-duct (except in very rare instances) and any obstruction of the bile-duct in cases of cancer of the liver is produced by pressure of secondarily affected glands in the portal fissure, which are certain to produce ascites if they produce jaundice. Even if nodules of carcinoma can be felt in the liver jaundice with white stools is not to be ascribed to that disease unless there be also ascites, but is probably the result of cancer of some other organ such as the pancreas to which the nodules in the liver are secondary.

Jaundice from disease of the pancreas is more common than might be inferred from the little stress until recently laid upon it. From the anatomical position of the gland tumours or enlargements of the head of the pancreas, unlike other tumours or enlarged glands in the portal fissure, can press upon and occlude the common bile-duct without compressing the vena portæ. Hence disease of the pancreas is capable of producing jaundice with colourless stools but without ascites—symptoms closely resembling those producible by gall-stones but distinguishable from them by the absence of severe colic. When jaundice comes on, either slowly or quickly, with white stools, without pain, or if with pain without the acute paroxysm of biliary colic or of perihepatitis and without the indications already described of duodenal ulcer or cancer, the jaundice is due either to disease of the pancreas or to catarrh of the common duct. If a tumour can be felt in the position of the head of the pancreas catarrh is excluded. Pain, too, would also exclude mere catarrh. If there is no tumour and no pain the diagnosis between catarrh and pancreatic disease is impossible for the time, but if the jaundice persists for over six weeks the presumption becomes great that it is not due to simple catarrh and is in all probability a result of disease of the pancreas. Confirmatory evidences of pancreatic disease may be present.

The enlargement of the gall-bladder which results from pancreatic as from all other forms of obstruction of the common duct is apt to be more marked in pancreatic growths than from other causes, such as gall-stones, for the obstruction from pancreatic disease is often more absolute than from gall-stones and, again, the latter often set up inflammatory adhesions about the gall-bladder which limit its distension. Bard and Pic [4] deny that enlargement of the liver occurs in cases of pancreatic obstruction of the duct, but Chopin and Molle [5] have shown that the liver may enlarge in this as in all other forms of obstruction of the common duct, and the post-mortem examinations in some of my own cases have shown that the liver may become of enormous size. In late stages there are often secondary nodules of cancer in the liver. Ascites is more often absent than present but may arise in the late stages of pancreatic disease. A tumour may be sometimes felt but a small growth in the head of the pancreas quite incapable of being felt through the abdominal wall may produce jaundice. In three of 12 cases of pancreatic growth no tumour could be felt. Fat in the stools sometimes occurs. Œdema of the feet without ascites may result from pressure on the inferior vena cava. Pain is usually, but not always, felt; it was absent in three of 12 cases. Melæna is not infrequent—it occurred in four of 12 cases; in one the disease had ulcerated into the duodenum. Secondary growths may occur in the skin or in the mediastinum (two cases). Glycosuria appears to be most common in non-malignant cases but it may occur in carcinoma of the pancreas, as in a case recorded by Shaw and Perry.[6] It is said that pancreatic obstruction prevents carboluria when salol is administered by the mouth. In one case now in Victoria Ward with presumably cancer of the pancreas, salol produced carboluria immediately. (Subsequently the necropsy of this patient showed obstruction of the bile-duct by cancer of the pancreas.) This and other cases of proved pancreatic obstruction have shown that the administration of salol is worthless as a test of pancreatic obstruction.

The statement has been made that cancer of the pancreas, unlike cancer of the liver, does not appear to be predisposed to by calculi in the biliary passages, but in two of my 12 cases pancreatic cancer as well as biliary calculi were found post mortem and in a case recorded by Shaw and Perry there was evidence of the same association. A previous history of gall-stones therefore in no way militates against the diagnosis of pancreatic cancer as a cause of jaundice. The nature of the disease of the pancreas suspected to be the cause of jaundice must be adjudged on the grounds which guide us generally, any solid tumour detectable in the position of the pancreas or any enlargement of cervical lymphatic glands pointing to malignancy.

CASE 3. *Carcinoma of the head of the pancreas producing jaundice and œdema of the feet.*—A man, aged 51 years, suffered from jaundice in August, 1899, and was sent to me at St. Mary's Hospital by the late Mr. J. C. Barr on Jan. 30th, 1900. He had jaundice. The stools were white: the liver was large and smooth, reaching to the level of the umbilicus, and there was a tense pear-like gall-bladder. No other tumour could be felt. There were no pain and no ascites but there was swelling of the feet and ankles. An operation by Mr. Pepper, on the possibility of the diagnosis of cancer of the pancreas being wrong, showed an irremoveable growth in the head of that organ. The wound healed and the man left the hospital.

CASE 4. *Carcinoma of the pancreas with calculi in the gall-bladder.*—A widow, aged 56 years, came into St. Mary's Hospital on March 7th, 1902, complaining of pain in the abdomen, the hip, and the right shoulder. There were occasional vomiting, jaundice with colourless stools, no ascites, a tumour palpable in the epigastrium, and slight pyrexia. Laparotomy was performed by Mr. Pepper and showed carcinoma of the head of the pancreas and secondary nodules in the liver. She had been a patient in the hospital eight years before for jaundice and suspected gall-stones. At the necropsy on April 6th numerous small calculi in the gall-bladder and cancer of the pancreas with secondary nodules in the liver were found to be present.

CASE 5. *Cancer of the pancreas and calculi in the gall-bladder.*—A female, aged 54 years, came under my care at St. Mary's Hospital on March 22nd, 1901, with severe epigastric pain and a much distended gall-bladder but no

[4] Revue de Médecine, 1888.
[5] Loire Médicale, 1893.
[6] Op. cit., Case 322.

jaundice; she wasted rapidly, but soon went out of hospital, only to return in June, 1901, with deep jaundice, colourless stools, a tender tumour in the epigastrium, and enlargement of the cervical lymphatic glands. She died on July 22nd and there were found carcinoma of the head of the pancreas and numerous calculi in the gall-bladder. Here enlargement of the gall-bladder resulted from the calculi and later jaundice from the cancer of the pancreas.

CASE 6. *Carcinoma of the pancreas with jaundice and melæna.*—A married woman, aged 46 years, was quite well till one morning in the early part of May, 1902, she found that she was jaundiced. About the middle of June attacks of vomiting commenced. She came under my care at St. Mary's Hospital on August 11th with deep jaundice and colourless stools. No tumour could be felt but the liver was very hard and smooth and its sharply defined lower edge could be felt below the level of the umbilicus. She had no pain except at the tip of the right shoulder; there had never been any pain in the lower region. No ascites existed. Salol given by the mouth produced carboluria in a few hours with great aggravation of the toxic symptoms from which she was then suffering; it was at once discontinued. She slowly got worse and twice passed blood by the rectum towards the end of the illness. The enlargement of the liver increased and the gall-bladder could be sometimes felt. She died comatose on Dec. 8th. The necropsy showed a hard mass of cancer in the head of the pancreas which had commenced to ulcerate into the duodenum. The liver was very large and hard and gorged with bile and as the latter ran out the liver rapidly lessened in size. The gall bladder was much distended but its tip only just came beyond the liver edge.

Jaundice without obstruction in the common bile-duct occurs in many conditions and for reasons not well understood. That it is due to a failure of the liver to secrete bile is disproved by the fact that when the liver fails to secrete bile no bile is secreted and therefore no jaundice results. The theory that the jaundice is a result of excessive absorption of bile from the intestines has also been disproved. In many cases the jaundice appears to be due to absorption from the small intrahepatic ducts of bile which has become more or less stagnant owing to a catarrhal condition of the epithelium lining these ducts set up by some poison in the blood. No explanation, however, quite satisfactorily accounts for the appearance of jaundice in all the conditions in which it occurs. They may be enumerated as follows: (1) poisons circulating in the blood, such as phosphorus, toluylendiamin, &c.; (2) toxins resulting from certain diseases—yellow fever, the exanthemata, pyæmia, &c.; (3) congestion of the liver; (4) hepatitis; (5) acute atrophy of the liver; and (6) conditions of the nervous system.

Jaundice from poisons.—Though we cannot satisfactorily account for the mode of causation we may set down jaundice as due to phosphorus poisoning if there is evidence that this substance has been taken.

Jaundice resulting from yellow fever, &c.—When jaundice occurs in the course of any of the diseases already enumerated we may similarly attribute the jaundice to the toxins of the disease.

Jaundice from congestion of the liver.—When there is jaundice with bile in the stools and the liver becomes enlarged and tender, with perhaps nausea or vomiting, we may infer that the jaundice is due to congestion of the liver, especially if it occurs in a tropical district.

Jaundice from hepatitis.—When the liver is much enlarged and smooth or "hobnailed" on its surface, or is much contracted, and especially if there are evidences of alcoholism, such as morning retching, with or without signs of portal obstruction, any jaundice which occurs with presence of bile in the stools may be set down as due to the cirrhosis and is, indeed, a confirmatory evidence of it. The form of cirrhosis in which jaundice is most common is the unilobular form with a large smooth liver and no ascites, but it may occur in the large liver with ascites, or in cases where the liver is contracted with or without ascites. Probably in most of such cases the jaundice is due to a catarrhal state of the small ducts.

CASE 7.—A man, aged 50 years, who denied alcoholic habits but who was afterwards ascertained to have drunk a bottle of whisky a day, had been in Africa a good deal but had no signs of malaria. In November, 1900, he began to feel ill and in February, 1901, became jaundiced with pain in the umbilical region. He was admitted under my care at St. Mary's Hospital on April 15th deeply jaundiced; there was bile in the stools and urine; there was no ascites. The liver was very hard, quite smooth, and reached down to the level of the umbilicus. He had lost two stones in weight in six months, but cancer of the liver was excluded by the smoothness of the surface of the liver and hepatitis was diagnosed. He remained about the same till May 7th, when he became drowsy and soon afterwards had a purpuric eruption over the body and legs. He went out of hospital on May 30th but I saw him again with his medical man at home dying comatose from jaundice with copious ascites.

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NOTE ON THE PERSISTENCE OF THE GRUBER-WIDAL REACTION IN CONVALESCENCE FROM TYPHOID FEVER.

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CURSCHMANN, in Nothnagel's "Encyclopædia of Practical Medicine,"[1] makes the following statement: "Among the sources of error in serum diagnosis the important observation should, in conclusion, be considered that the agglutinating action of the serum may persist for months, and even years, after recovery from an attack of typhoid fever" (Lichtheim, C. Fränkel, Stern). If this observation holds good for the majority of cases the presence of a serum reaction in an old typhoid fever patient with a fresh attack of fever of doubtful nature might easily lead to an error in diagnosis. But the consideration of a large number of cases investigated by other observers leads one to the conclusion that the persistence of the serum reaction after the first few months of convalescence is the exception rather than the rule.

Widal[2] examined 40 cases, of which 11 gave a positive reaction, one giving a reaction eight and a half years afterwards with a dilution of 1 in 1800. Fison[3] examined 21 cases from three months to eight years after attacks, of which 18 gave positive reactions. Renard[4] examined 104 cases, 35 of which gave positive reactions, five of these being 20 years after the attack. Elsberg[5] investigated 36 cases and found the reaction present in eight cases one month after convalescence. He also found that the reaction had disappeared in one case in the fifth week of convalescence and in two cases in the third week of convalescence. It is interesting to note that the above observers used very different dilutions in their experiments. Thus Fison used 1 in 2 and 1 in 9 with a 30-minute time limit. Renard used 1 in 10 except in one case, when he obtained a reaction in 1 in 40. Cabot makes no mention of the dilution used by Widal.

We have examined the serum of all the cases of typhoid fever treated at St. Thomas's Hospital from 1899–1901 which we have been able to reach by letter. In this series of cases the typhoid bacilli used were the descendants of a single colony obtained from the case of multiple typhoid abscesses operated on by Dr. H. C. Jonas in St. Thomas's Home and reported by him in conjunction with Dr. C. G. Seligmann.[6] From 18 to 24 hour old agar cultures were used by us. These were emulsified with tap water and the emulsion was passed through filter paper in every case to avoid false clumps. Each emulsion was carefully examined before use and those possessing the highest degree of motility were selected. A control of the emulsion used was examined in every case. A dilution of 1 in 10 was first used in all cases. When any indication of reaction occurred 1 in 20 and 1 in 50 dilutions were proceeded with; the time limit was half an hour in all cases. The sera were thus put to exactly the same test as that to which they had been subjected in the original attack. No cases were selected which had not previously given the

[1] Vol. i., p. 430.
[2] Cabot: Serum Diagnosis of Disease.
[3] Brit. Med. Jour., July 31st, 1897.
[4] Thèse de Paris, 1897.
[5] New York Medical Record, vol. ii., p. 510.
[6] THE LANCET, Oct. 4th, 1902, p. 931.

TABLE SHOWING THE SERUM REACTIONS IN 68 CASES AT VARIOUS PERIODS AFTER RECOVERY FROM TYPHOID FEVER.

Months after the attack.	Total number of cases.	Positive reaction.	Negative reaction.	Details of the negative cases showing indication of reaction.
1—6	2	1	1	One case with a dilution of 1 in 10 gave loose clumps with very little loss of motility.
7—12	11	1	10	One case with a dilution of 1 in 10 gave well-marked clumps with incomplete loss of motility; a 1 in 20 dilution gave a few clumps with no loss of motility. One case with a dilution of 1 in 10 gave a complete reaction; a 1 in 20 dilution gave a few clumps with no loss of motility.
13—18	15	—	15	Two cases with a dilution of 1 in 10 gave clumping in five minutes and complete loss of motility, and with one of 1 in 20 there were loose clumps and slight loss of motility. Two cases with a dilution of 1 in 10 gave tight clumps with very slight loss of motility; a dilution of 1 in 20 gave the same result; a dilution of 1 in 50 was absolutely negative. One case gave a complete reaction with a dilution of 1 in 10; a dilution of 1 in 20 gave loose clumps with slight loss of motility, and one of 1 in 50 was absolutely negative. One case with a dilution of 1 in 10 gave well-marked clumps with much loss of motility; a dilution of 1 in 20 was absolutely negative.
19—24	17	2 (doubtful)	15	The positive cases are doubtful (see below). Two cases with a dilution of 1 in 10 gave a few loose clumps with a slight loss of motility and with one of 1 in 20 the result was absolutely negative. One case with a dilution of 1 in 10 gave a few loose clumps with a distinct loss of motility and one of 1 in 20 was absolutely negative. One case with a dilution of 1 in 10 gave well-marked clumping with incomplete loss of motility; with one of 1 in 20 there were some loss of motility, &c., and a few clumps; and with one of 1 in 50 there were a few clumps with slight loss of motility.
25—30	7	—	7	One case with a dilution of 1 in 10 gave a complete reaction; one of 1 in 20 clumped in 15 minutes; the loss of motility was incomplete in 30 minutes; and one of 1 in 50 was absolutely negative. One case with a dilution of 1 in 10 gave a complete positive reaction and one of 1 in 20 was absolutely negative.
31—36	9	—	9	One case with a dilution of 1 in 10 gave loose clumps with little loss of motility; one of 1 in 20 gave a like result; with one of 1 in 50 there were a few loose clumps and no loss of motility.
37—42	4	1	3	
43—48	*3	—	3	

standard positive Widal reaction at the time of attack—i.e., absolute clumping and loss of motility in 30 minutes with a dilution of 1 in 50. None of the patients had suffered from any acute fever in the interim. In the cases which are quoted in the accompanying table as giving an indication of reaction a reaction more or less marked took place with the low dilution, but this became weaker with 1 in 20 and was absent with 1 in 50.

Two of the cases were doubtfully positive. 1. The patient was a male, aged 44 years. The test was made 22 months after the attack. No illness had occurred in the interim. During the attack the serum gave a positive reaction with a dilution of 1 in 100. A dilution of 1 in 10 gave tight clumps with absolute loss of motility in 10 minutes; one of 1 in 20 gave tight clumps with incomplete loss of motility in 30 minutes; and one of 1 in 50 gave a few loose clumps with slight loss of motility in 30 minutes. 2. The patient was a male, aged 25 years. The test was made 23 months after the attack. Dilutions of 1 in 10 and 1 in 20 respectively gave tight clumps with absolute loss of motility in 25 minutes; with a dilution of 1 in 50 the clumps contained motile bacilli. The loss of motility was incomplete.

Three of the cases gave a positive reaction. 1. The patient was a male, aged five years. The test was made two months after the attack. With a dilution of 1 in 50 there were instantaneous clumping and loss of motility. 2. The patient was a male, aged 33 years. The test was carried out 12 months after the attack. A dilution of 1 in 50 gave instantaneous clumping and loss of motility. 3. The patient was a male, aged eight years. The test was made 38 months after the attack. The reaction was complete with dilutions of 1 in 20 and 1 in 50 respectively. The patient in No. 2 was operated on for gall-stones five months after his attack of typhoid fever; at the operation pus and some small gall-stones were found. The pus gave cultures of the colon bacillus, but serum gave a positive reaction with the bacillus typhosus. This case is of interest, being analogous to cases quoted by J. B. Miller,[7] when in an operation seven years after the attack typhoid bacilli were found in the gall-bladder and serum gave a positive reaction, and by Elsberg,[8] when in cases of osteomyelitis following typhoid fever five months and 16 months respectively after an attack serum gave a positive reaction. In No. 3 nothing could be found to explain the persistence of so strong a reaction after a lapse of more than three years.

Conclusions.—From the accompanying table of 68 cases it is seen that only three cases gave a positive reaction, one of which was only two months after the attack. This is a much smaller proportion of positive reactions than is given by Renard (35 out of 104), Fison (18 out of 21), Elsberg (eight out of 36), and Widal (11 out of 40). The difference is due partly to the inclusion by them of cases in which only a few weeks had elapsed since the original attack and partly to the low dilutions used by them—e.g., Renard 1 in 10 and Fison 1 in 2 and 1 in 9. If we had considered a positive reaction with 1 in 10 sufficient our list would have shown eight more positive reactions, bringing our proportion up to 11 out of 68. While, however, we have no doubt that the reaction with the low dilution shows that the blood in some cases retains for a long time the specific agglutinating action on the bacillus typhosus, yet we wish to insist that this need lead to no error of diagnosis provided that sufficiently high dilutions—i.e., 1 in 20 or 1 in 50—are proceeded with in cases in which there is any doubt.

Elsberg states that he found no relation between the severity of the attack and the duration of the reaction. Our observations are in accordance with this. Many of our negative results were obtained from cases which had had severe attacks, often with relapses, while the patient in whom the only positive result, which cannot be explained on other grounds, had been obtained suffered from a mild attack without complications or sequelæ.

The case of gall-stones mentioned above falls in line with the cases cited by American observers and supports the theory that the persistence of the reaction is due to the continued presence of the bacillus typhosus in the gall-bladder and elsewhere long after the original attack of fever. But the case described by Dr. Jonas and Dr. Seligmann,[9] where in a case of multiple typhoid abscesses two years after attack the patient's serum gave only a partial reaction with 1 in 20, weakens the evidence in favour of this theory. (See also the case of Da Costa quoted by Dr. Jonas and Dr. Seligmann.)

St. Thomas's Hospital, S.E.

[7] Johns Hopkins Bulletin, vol. ix., No. 86.
[8] New York Medical Record, vol. li., p. 510.

[9] THE LANCET, Oct. 4th, 1902, p. 931.

DONATIONS AND BEQUESTS.—The Belfast Society for the Relief of Destitute Sick, the Belfast Nurses' Home and Training School, the Belfast Society for Providing Nurses for the Sick Poor, and the Greencastle District Nursing Association receive £1000 each under the will of the late Mr. James Gray of Antrim.—Miss M. A. Kirby of Bristol has bequeathed £2000 to the Bristol Royal Infirmary and a like sum to the Bristol General Hospital.

ON THE USE OF THE ROENTGEN RAYS IN THE DIAGNOSIS OF PULMONARY DISEASE.[1]

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IN addition to the established methods of medical investigation of diseases of the chest comprised under the headings of inspection, palpation, percussion, auscultation, and mensuration we now have at our disposal the Roentgen rays, a newer yet not less potent factor in diagnosis. These rays, accidentally discovered by Professor Wilhelm Konrad Roentgen of Würzburg towards the close of the year 1895, although their nature and scope are as yet imperfectly understood, play nevertheless a most important part in diagnosis, prognosis, and treatment. For some time past the surgeon has found them of special value when he is called upon to reply to the many difficult questions which arise in the practice of his profession concerning injuries and diseases of the osseous system. It is only quite recently, however, that their uses to the physician have been clearly recognised and at the present time we seem to be standing on the threshold of discoveries which will prove to be of wide and far-reaching importance in the daily detection of deep-seated and obscure affections.

In a new science a new terminology is desirable in order that conceptions of new facts may find their adequate expression, and in the course of this paper a few terms will be found for the first time, amongst them being the adjective "transradiant" and its corresponding noun "transradiancy," which have been used in order to express more clearly the idea of permeability of the chest to the Roentgen rays than does either of the terms "translucency" or "transparency," hitherto in vogue. Although, according to the recent researches of M. Blondlot,[2] the Roentgen rays appear susceptible of polarisation and may eventually be found to conform to the laws of light, yet the use of the term "translucent" implies an assertion which has not at present been proved. No such objection can be brought against "transradiant." Under their proper headings hereafter the "cardio-phrenic space" and "pleuro-pericardial lines" will be referred to.

My object is not to dissociate the Roentgen rays from the other modes of physical clinical research—although at times, as I shall show later, an accurate diagnosis may be based on the evidence which the rays afford, taken by itself alone—but to bring them into line with the older methods, an outline comparison with which will be found in the accompanying tables:—

METHOD.

Radioscopy	=	Inspection.
Radiography	=	Palpation.
Stereoscopic Radioscopy / Radiography	=	Percussion.
	=	Auscultation.
Localisation	=	Mensuration.

RESULT.

Roentgen rays.		*Percussion.*
Brightness	=	Hyper-resonance.
Transradiancy	=	Normal resonance.
Faint shadow	=	Impaired resonance.
Dense shadow	=	Dulness.
Opacity	=	Absolute dulness (tanquam femoris).

Thus it is clear that the so-called physical signs are really the results obtained by the use of a physical method.

Much of the practical work in connexion with this subject was done during my clinical assistantship at the City of London Hospital for Diseases of the Chest, Victoria Park, and I am greatly indebted to Dr. Hugh Walsham for his kindness in placing at my disposal so much excellent clinical material and apparatus and for the many helpful suggestions which he has made from time to time. To Dr. H. Lewis Jones also my thanks are due for the facilities granted to me for working in the electrical department at St. Bartholomew's Hospital.

[1] An abstract of a thesis, "The Roentgen Rays as a Means of Diagnosis in Intrathoracic Disease," for the degree of Bachelor of Medicine of the University of Cambridge.

[2] Comptes Rendus, Feb. 12th, 1903.

RADIOGRAPHY AND RADIOSCOPY OF THE THORAX.

The apparatus which is essential comprises: (*a*) a means of generating the electrical current—usually an induction coil or static machine; (*b*) a vacuum tube and holder; (*c*) a sensitised photographic plate; and (*d*) a fluorescent screen.

Having first tested the apparatus to make sure that it is working properly the patient should then be brought in and placed in the required position—usually seated or recumbent; the plate is held securely against the thorax so that it cannot move and the current is started. The time of exposure is important and depends on many factors. With the tube at a distance of about two or three feet from the patient an exposure of from one to three minutes is usually sufficient. The penetration of the tube should not be too great, otherwise structures, which should appear dense, become transradiant. In like manner over-exposure of the photographic plate causes obliteration of shadows. The plate should always be placed with the film side next to the skin, because this insures sharper definition and also prevents some of the rays from being absorbed by the glass.

In order to know in a radiograph which is the right side and which is the left the relative position of the focus-tube to the patient and the film side of the plate must always be stated. We know that for any shadow to be cast at all the patient must be between the tube and the plate, and a comparison may be instituted between the skiagraphic effect thus obtained and that produced in the familiar "shadow show" by the interposition of objects which arrest the rays in their passage from a magic-lantern to the white screen. As Mr. J. Mackenzie Davidson[3] has well remarked, "These pictures consist of shadows projected by the rays from a fixed point; a skiagram must not be regarded as if it were a map." The proper interpretation of x-ray pictures can be brought about only by careful and repeated observations, but, thanks to stereoscopy, we can now bring to our aid the third dimension in space, so that a better estimate can be formed concerning the relative proportions of parts. The observations which follow were all made with the aid of an induction coil capable of giving a 14 inch spark at high pressure between the terminals of the secondary coil, which is composed of some 15 miles of wire wound in 70 sections. It is worked by two 4-cell accumulators, charged by continuous current from the main, of 21 ampère-hours' capacity and a total electromotive force of 16 volts. The tubes used were those made by C. H. F. Müller of Hamburg, of moderate "hardness" or penetrative power, the platinum anode being placed always exactly opposite the centre of the part to be photographed and the distance of the tube between one and two feet from the thoracic parietes.

The method of radioscoping the thorax is precisely the same as for radiography except that for the photographic plate we substitute the fluorescent screen and bring the tube nearer to the chest. The tube must not be placed in too close proximity, otherwise, owing to divergence of the rays, just as in the shadow show referred to above, the shadow of structures near to the tube will appear larger and more indefinite than that of structures more remote.[4] Examination with the tube posteriorly as well as anteriorly will help in great measure to correct erroneous impressions based on an examination from one aspect alone. Another equally important point, which cannot be insisted on too frequently, is that the anode should directly face the centre of the part to be observed with its surface parallel to the greatest transverse diameter of the chest.

RELATIVE USEFULNESS OF THE FLUORESCENT SCREEN AND THE RADIOGRAPH.

For some time past the question has been discussed as to the superiority or otherwise of radioscopy to radiography. The truth of the matter seems to be that both methods are indispensable and that the choice of one or the other is to be regulated according to circumstances. Where, as in hospital, one has to examine a number of patients it is manifest that in each individual case radiography is out of the question, for in a large proportion of these a diagnosis may be furnished at once on the results of radioscopy combined with auscultation and percussion. I think that in every case examined by means of the x rays a screen examination should be instituted, whether a photograph be subsequently taken or not, and that in a case

[3] Observations on Practical X-Ray Work, Archives of the Roentgen Ray, February, 1900.

[4] Archives of the Roentgen Ray, 1903.

presenting any difficulty, where it is of importance, from the point of view of after-treatment, to arrive at a correct diagnosis, one or more radiographs taken from different points of view should always supplement the fluoroscopic investigation. In private cases both methods should be used, for the action of the rays is cumulative and minute details which cannot be detected by the screen show clearly in the developed plate. Moreover, radiographs can be taken at successive dates and the progress of the disease thus noted. The fluoroscopic evidence is fleeting, although by making graphic records at the time of examination we may obtain some of the advantages of the radiographic method. In short, radioscopy records dynamic and radiography static conditions.

THE NORMAL THORAX.

The radiograph of a normal thorax, whether examined from the front or the back, presents a well-defined median opacity bounded laterally by parallel vertical margins on each side of which appears a transradiant area crossed by curved and arching shadows. This median vertical band of opacity corresponds with a resistance to permeability due to the vertebral column, the sternum, and the mediastinum with its contents; from the upper part of this band stretch two narrow shadows upwards and outwards—these correspond to the clavicles. Laterally the mediastinal shadow does not extend far beyond the limits of the sternal shadow. If the picture be taken with the tube placed posteriorly a shadow, somewhat triangular in outline, will be seen extending much more to the left than to the right of the thorax. This does not obscure the outline of the curved shadows referred to above, which represent the ribs, and corresponds to the heart and pericardium. By means of the fluoroscope a pulsation synchronous with each heart-beat may be observed.

Alongside the mediastinal opacity and following the outline of the cardiac shadow are seen in many radiographs faint and ill-defined lines or streaks the nature of which is still uncertain (*vide* Fig. 1, *b*). It was originally thought that these lines represented the lower bronchi and bronchioles. Later these streaks were attributed to mediastinal glands. Another opinion, first put forward by Dr. Walsham,[5] is that they are "due to the visceral pleura covering the inner surface of the lungs, as seen edgeways, and to the pericardium."

That these lines are not caused by the bronchi is, I think, clear for two reasons. It will be seen, in the first place, that the position of the lines does not correspond with the divisions of the bronchi. Even granting that these lines were so caused their position is such that they could be caused only by the lower ones. No shadows are visible representing the bronchi, or the smaller tubes into which they divide, for the upper lobes, and it is difficult to see why these should not cast a shadow as well as the lower ones. Hence this suggestion appears untenable. In the second place, in all post-mortem radiographs of lungs which I have seen—a good example being reproduced in a paper by Dr. F. Gardiner[6] and another in Dr. Francis Williams's[7] book—the larger primary bronchi show, *not* as dark streaks or shadows, but as light areas, owing probably to their contained air, their density in the former specimen being equivalent to that of cavities present in the same lung and a little brighter than a patch of emphysema at the apex. It is improbable that the streaks are produced by mediastinal glands, for these are more mesial and produce, not lines, but patchy and irregular shadows.

With regard to the third view, I agree with Dr. Walsham[8] that a portion of the lines is due to the pericardium, but that the "visceral pleura" takes any share in their causation seems impossible from a consideration of the post-mortem skiagrams adduced in support of his opinion, for in the third and fourth radiographs taken with the lungs—and with them the visceral pleura—removed these lines still remain. That they are not due to the pericardium alone is clear, since in favourable cases they may be seen extending upwards as high as the sternal ends of the clavicles. To these streaks Dr. Walsham has applied the terms "cardiac lines" and "mediastinal lines" respectively, but since in all probability they belong to the junction of the parietal pleura with the pericardium and are manifestations of these, being radiographically continuous, I venture to suggest (under correction) the term "pleuro-pericardial lines" as being more expressive of what I take to be the origin of these shadows.

These streaks are not seen in every case, but when they occur recognition of them is important, for if their true nature be not realised they are very apt to be mistaken for evidences of disease, especially in a case in which "early" pulmonary tuberculosis is suspected.

Other normal shadows are caused by the scapulæ. These can be largely eliminated by causing the patient to place both hands upon the top of the head and to rotate the elbows forward. This causes the scapulæ to turn edgewise and the upper part of the thorax is thus more clearly seen. Shadows cast by the scapulæ and clavicles can be recognised, if any doubt exist, by getting the patient to move the arms, when the shadows also are seen to move. Another somewhat triangular dense shadow presents itself in muscular subjects and is due to the large muscles of the shoulder girdle—chiefly the trapezius and pectorales major and minor. This is best seen when the patient is radiographed with outstretched arms, since this position causes the anterior axillary fold to become thicker. In females the mammary glands are sometimes represented by curved shadows.

On both sides of the median opacity a clear zone corresponds to each lung, which in health is transradiant from apex to base, thus allowing the posterior portions of the ribs, as well as the anterior, to be seen and producing a "lattice-work" effect. Laterally the lungs are bounded by a darker line formed by the ribs where the shadows of these overlap. In a few cases, especially in children, this line may appear as a dense black edge sharply limiting the inclosed area. The lungs brighten on deep inspiration, the varying degrees of transradiancy in the stages of expansion and contraction being probably for the most part due to the greater or less content of air at the time. Dr. Williams[9] attributes it, however, to the greater or less content of blood, for in comparing inflated with collapsed lungs removed from the body no such difference was noted by him. Inferiorly, the lungs are limited by a dark shadow

FIG. 1 (*diagrammatic*).

Showing (*a*) "cardio-phrenic space" and (*b*) "pleuro-pericardial lines" (tube posteriorly).

with its convexity upwards, not dense enough to obscure the outlines of vertebral column or ribs. This rises and falls with the respiratory movements and corresponds to the diaphragm, below which shadows are cast by the liver and the spleen, a lighter interval appearing between these in some cases.

When the chest is examined with the tube anteriorly, to the left of the shadow cast by the vertebral column will be

[5] The Practitioner, July, 1901.
[6] X-Rays as a Diagnostic Agent in Phthisis Pulmonalis, Scottish Medical and Surgical Journal, November, 1902.
[7] The Roentgen Rays in Medicine and Surgery, 1902, Fig. 99.
[8] Archives of the Roentgen Ray, 1902
[9] The Roentgen Rays in Medicine and Surgery, 1902.

seen a semicircular pulsating shadow just above the base of the heart. This is termed the "left lateral bulge" and corresponds to the ascending part of the aortic arch. It is enlarged in aneurysm of that situation, or when displaced by the pressure of enlarged mediastinal glands. In a few cases a narrow triangular space is seen between the heart and the diaphragm, which lengthens and widens on deep inspiration but never extends so as to divide the shadows of the heart and the liver (see Fig. 1, *a*). Dr. Walsham formerly denied the existence of this space but now tells me that he has changed his opinion. I have repeatedly seen this appearance with the radioscope, but in the radiograph, owing to blurring due to movements of the heart and the diaphragm, it is more elusive. Since it is bounded by these organs above and below respectively I have given to this interval between the heart and the diaphragm the name of "cardio-phrenic space." I do not think that it has any pathological significance, for it is visible in many apparently healthy chests.

EXCURSION OF THE DIAPHRAGM.

The diaphragm is best observed with the focus-tube anteriorly, the screen being against the patient's back. The shadow in health presents two dome-shaped convexities, one on each side—that on the right being slightly higher than that on the left—and each half rises and falls after the fashion of a piston, symmetrically and rhythmically with expiration and inspiration. The text-books of physiology state that the diaphragm becomes flatter on inspiration: thus Sir Michael Foster[10]: "When at rest the diaphragm, drawn up by the negative intrathoracic pressure, presents a convex surface to the thorax; when contracted it becomes much flatter." So also Dr. E. H. Starling[11]: "When the muscular fibres of the diaphragm contract, two events occur, first, a lowering of the diaphragm; and second, a flattening of its circumference, which is thus drawn away from the chest wall." Other books on physiology follow suit. But, in point of fact, on radioscopic examination no flattening of the diaphragm is seen. The curve of the convexity on both sides is unaltered in descent, and each half—although attached to its fellow of the opposite side by the central tendon—by means of its own separate innervation through the phrenic acts quite independently. Taking the average of a large number of normal cases, I find that in quiet respiration the diaphragm moves half an inch on each side; but in maximum respiration the right side moves 2½ inches and the left 2¼ inches, the right side having usually a wider excursion by about a quarter of an inch than the left.

UNILATERAL LIMITATION OF DIAPHRAGMATIC MOVEMENT IN PULMONARY TUBERCULOSIS.

After many and repeated observations I have found that loss of mobility of the diaphragm is the earliest indication of tuberculous mischief in the lung. Before any shadow due directly to the tuberculous process in the lung is visible the action of the diaphragm becomes evidently less on the unsound side. On looking up what few records there are on this interesting point, I find that Dr. Francis Williams[12] has published the following: "In many cases of pulmonary tuberculosis the range of movement of the diaphragm is shorter than in health; it does not descend as far as it should and this shortening of the excursion preceded in some cases the increase in density of the lungs and sometimes is one of the earliest signs of pulmonary disease." Dr. Bonnet-Léon[13] of Paris has not only reached the like conclusions but goes even much farther than I am prepared to admit. He states that, if diminution in the amplitude of the diaphragmatic excursions be observed, in the absence of any obvious cause one must always bear in mind the idea of commencing tuberculosis and must keep the patient under observation "in whom, some time later—90 times out of 100—will be found clear evidences of tuberculosis." To this impairment of diaphragmatic function Dr. Bonnet-Léon applies the term "diaphragmatic sign," and states that he meets with it at a time in the patient's life-history which he terms "the pre-tuberculous period." It seems to me that either a person has tuberculosis or he has not and that there is no intermediate stage such as this observer assumes. Hence I object to his term "pre-tuberculous" and would suggest that the tuberculous process has already begun; in other words, that the tubercle bacilli are present and active although the process in the lung is not so advanced as to cast a definite shadow. I fail to see why in a healthy chest, even though its owner be "predisposed to tubercle" or of tuberculous descent, there should be unilateral diminished activity of the diaphragm. The cause of this early limitation of diaphragmatic movement has not yet been satisfactorily explained. One surmise is that it is due to unrecognised pleurisy which has left slight traces in the form of adhesions.

May not the cause be more reasonably assigned to a modification in some way of the inherent elasticity of the lung owing to the influence of the tubercle bacilli within it? Possibly some such process as the following takes place. One apex does not expand as much as its fellow because its tissue vitality has suffered through toxic causes. Hence compensation is promoted in the lower lobe. But on account of the elasticity of the lung more muscular effort is required to obtain the additional expansion of the lower lobe which is necessary owing to lack of expansion in the upper. Hence it follows that want of descent of the diaphragm is mainly due to increased resistance to expansion on the part of the elastic tissue of the lower lobe on the affected side—that is to say, the deficient movement of the diaphragm is secondary to the lung condition. In out-patient practice one does not so frequently meet with pulmonary tuberculosis in this early stage, yet in a large proportion of cases which showed no resistance to permeability on screen examination, I have noticed deficient movement of the diaphragm on one side of the chest. In all these cases, of course, the ultimate test of tuberculosis is the finding of tubercle bacilli in the sputa. Unfortunately, this early stage cannot be illustrated by radiographs, for they would show nothing more than the appearances of any healthy chest, but the observations can be verified by anyone who takes a number of suspected cases without physical signs and examines them radioscopically.

LIMITATION OF DIAPHRAGMATIC MOVEMENT IN FIBRO-CASEOUS PULMONARY TUBERCULOSIS.

When the disease has progressed so that the characteristic stippled shadows are visible in the lung limitation of diaphragmatic mobility may become more pronounced or may decrease owing to compensatory hypertrophy of the muscle elements. It is a striking result that marked limitation may occur even when the apex only of the lung is attacked. This is probably due, as in the early cases, to toxic influences, but here there is in addition actual destruction of the lung tissue. In more advanced cases, moreover, where pain is a frequent symptom this cause, apart from other considerations, acts powerfully in inhibiting or lessening diaphragmatic movements. In the great majority of cases inflammation of the pleura coexists, as the pain may signify, and when the symptoms have become more chronic and adhesions have formed these also limit the action. MM. Kelsch and Boinon[14] examined radioscopically the chests of 124 young soldiers suffering from more or less simple ailments, not pulmonary. In 73 of these the examination proved negative; in 13 cases unilateral diminution of diaphragmatic excursion was apparent and in one bilateral diminution. In some cases the lungs were found to be in shadow, in others they were free. It is not possible to say that all the abnormal cases were tuberculous, for limitation may depend on other causes, but probably the greater number were so.

In the accompanying table are recorded the results of observations in 20 cases, and notes of Cases 2, 6, 8, and 10 will be found in the section on "Pulmonary Tuberculosis." Diminution in extent of excursion of the diaphragm will be noted in the great majority on the side most affected, the general rule being that in quiet and normal breathing the excursions are equal on the two sides, but on maximum respiration they are slightly greater in extent on the right than on the left side. The diminution referred to is well marked in Cases 3, 6, 13, and 18. Case 14 is interesting in that, although one of tuberculosis, the range of movement of the diaphragm is very much above the average. In Cases 6 and 12 the movement of the diaphragm was jerky and interrupted. In other cases undulatory movements have been noted. It is possible that these phenomena may be due to faulty innervation, the result of reflex irritation from the affected lung.

[10] Text-book of Physiology, sixth edition, Part ii., 1895.
[11] Schäfer's Text-book of Physiology, vol. ii., 1900, p. 276.
[12] The Roentgen Rays in Medicine and Surgery, 1902.
[13] Sur l'Emploi des Rayons de Roentgen pour le Diagnostic Précoce de la Tuberculose Pulmonaire, Transactions of the British Congress on Tuberculosis, 1901.
[14] Béclère: Diagnostic de la Tuberculose, p. 41.

Table showing the Range of Mobility of the Diaphragm in 20 Cases of Pulmonary Tuberculosis.

No.	Sex.	Age.	Measurements in inches. Quiet respiration. Right	Quiet respiration. Left	Maximum respiration. Right	Maximum respiration. Left	Remarks.
1	F.	24	⅛	½	2¾	2¼	Early; left apex.
2	M.	35	¾	¾	1¾	1¾	More advanced on the left side.
3	M.	27	1¼	1	2¼	1¾	More advanced on the left side.
4	M.	21	¾	¾	2¾	2¼	Left fibroid; diaphragm one and a half inches higher on the affected side.
5	F.	24	⅜	¾	2⅜	3	More advanced on the right side.
6	M.	26	½	⅜	2	2⅜	More advanced on the right side.
7	F.	13	½	¾	2¾	2⅜	Right side.
8	F.	33	⅜	½	2¼	2½	More advanced on the right side.
9	F.	50	¾	⅜	1¾	1½	Equal at both apices.
10	M.	30	¼	¾	2¾	3	Early; more advanced on the right side.
11	M.	29	⅜	½	2¾	2½	Equal at both apices.
12	M.	44	½	¾	2¾	2¾	More advanced on the right side; diaphragm 2¾ inches higher on the affected side.
13	M.	31	¾	1	1¼	1½	Late; more advanced on the right side.
14	M.	19	1¼	1¾	3¾	3¾	Right apex.
15	M.	32	¾	⅜	1¾	1¾	Left apex.
16	M.	31	⅜	½	1¾	1¾	Both apices; more advanced on the right side.
17	M.	50	1	½	—	—	Both lungs; more advanced on the left side.
18	M.	33	½	¾	2¼	2¾	Both apices; more advanced on the right side.
19	F.	31	⅜	⅜	2¼	2¼	Right apex.
20	M.	25	¾	½	1	1½	Both lungs; more advanced on the left side.

PULMONARY TUBERCULOSIS.

In the diagnosis of tuberculosis of the lung the Roentgen rays reach their widest and most practical everyday application. Aneurysms are comparatively rare; the insidious tubercle bacillus is with us always. Although observers may differ widely as to the interpretation of evidence based on tactile and auditory impressions, ocular evidence in most cases admits of no difference of opinion. Dr. Immelmann[15] of Berlin says: "We cannot rely upon percussion; its results are often in no proportion to the gravity of the disease. It may not give any indication in the very early stages of the malady, nor even of small cavities imbedded in the air-holding tissues of the lung. With auscultation it is not very different. No sound of respiration is characteristic of the phthisical process. We are in a position to give a definite diagnosis by clinical methods only when the tuberculous foci disintegrate and open into the bronchi and the possibility is offered of finding tubercle bacilli in the sputum."

Diagnosis to be of much service in pulmonary tuberculosis must be early. As Dr. Samuel Gee remarks,[16] "Therapeutics must begin before physical signs have developed, for if you wait for physical signs you wait too long." It is claimed that the Roentgen rays can detect tuberculosis of the lung at an earlier stage than any other means of physical diagnosis up to the present time at our disposal. In order to illustrate this I would take a typical patient in whom "early phthisis" is suspected and who comes up to the out-patient room with a slightly impaired note over one apex, over which area prolonged expiration is audible; nothing further can be ascertained except that the patient has a cough; he has not had hæmoptysis, he has not lost flesh, nor has he a family history of tubercle. This evidence, so far as it goes, is not sufficient to justify a diagnosis of pulmonary tuberculosis. This I say advisedly, because, although there is a difference of opinion on this point, some physicians being confident enough to give a definite diagnosis of tubercle on these signs alone, yet it should be remembered that at times a case of mitral stenosis presents many similar signs to those of phthisis at one apex, such as impaired note, prolonged and harsh expiration, and dry crepitations, resembling pleural crepitus (most frequently in the third left intercostal space), and yet no tubercle is found post mortem, the physical signs having been due to pulmonary embolism. The dry cracklings may be due to forcing of air out of the air vesicles in juxtaposition with the left auricle (Sansom, Walsham, Ormerod). If, however, the patient be examined then and there with the fluorescent screen a shadow of medium density will probably be seen obscuring the whole of the upper lobe of the lung on the side previously suspected. It is almost certain that pulmonary tuberculosis, which has gone far enough to cause physical signs, is never unilateral, and this point is brought out much more clearly by x-ray investigation than by the older methods. It is now a well-recognised maxim that the so-called "early phthisis" is in reality a stage already moderately advanced. In the words of Professor Clifford Allbutt,[17] "A case presenting the ordinary first-stage symptoms of the out-patient room, if for our fathers an incipient case, is in our eyes an advanced case." If now we examine our typical case three months later we find that the shadow has gained in density, clouding over two-thirds of the lung on the side where the disease first became apparent, and over the upper half of the opposite side extends a similar but lighter mottled shadow. Still later evidences of consolidation and excavation become more manifest and so one can watch the progress of the case either by the radioscope or, preferably, by radiographs taken at stated intervals. But the object of the physician is to check the course of the malady and early diagnosis being most important we have to ask: "At what stage does tuberculosis of the lung first give evidence of its presence to the fluorescent screen or radiograph?"

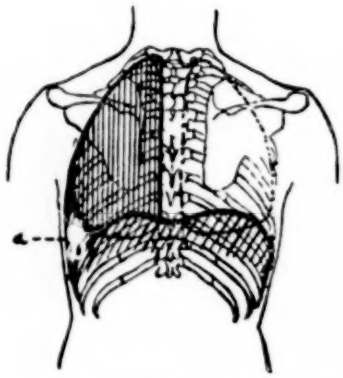
It may be taken as an axiom that tubercle bacilli cast no shadow on a photographic plate. Hence the earliest stage of invasion of the lung cannot be recognised except by impaired mobility of the diaphragm. The next pathological state is that of grey miliary tuberculosis and I have long tried to obtain a photograph to show acute miliary tuberculosis in the lung of a living subject but have not yet succeeded. Dr. David Walsh[18] has published a radiograph of the lungs of an infant exhibiting miliary tubercles, but in this the stage of caseation had been reached. The radiograph, too, was taken post mortem. Further investigation is yet required, but up to the present the evidence goes to show that tubercles in the lung cause no shadow until they have reached the "yellow" or caseating stage and then only in children or persons with very permeable chests. I have investigated the notes of one case, published in 1901 as "acute miliary tuberculosis in a child," radiographed during life, but found that there was no post-mortem evidence of tubercle in the lungs, the darker patches interspersed with lighter areas being due to broncho-pneumonia.

The typical shadow cast by "early" pulmonary tuberculosis is mottled or stippled. This appearance is characteristic and is simulated only by new growth, which latter is distinguished by the distribution of the shadows, peculiar physical signs, and the history. Other shadows, for which the tuberculous shadow may be mistaken, are those due to adhesions or to such normal appearances as the mammary shadow or the pleuro-pericardial lines. All of these may be distinguished by their greater homogeneity and regularity. Valuable information may often be gleaned from the angle of inclination of the ribs and the distinctness or not of their outlines. Consolidation throws a shadow of moderate density and this is increased if the lung be congested, but the loss of permeability due to caseation throws a still darker shadow. Appearances presented by cavities vary according to their size, position, and whether empty or not. Cavities only half an inch in diameter have been clearly seen during life and their existence verified post mortem. A cavity at the apex or on the side nearest the focus-tube and close to the surface of the lung appears if empty as an area of unusual transradiancy. If full of pus or retained secretion, if imbedded in the centre of the lung or in a mass of consolidation, it may not appear, or it may be found lighter

[15] Quoted in Archives of the Roentgen Ray, 1900, p. 76.
[16] Medical Lectures and Aphorisms, 1902, p. 240.
[17] Transactions of the British Congress on Tuberculosis, 1902.
[18] Recent Progress in Radiography, The Hospital, Oct. 7th, 1899.

or darker than the surrounding tissue and, in such conditions, it is difficult to diagnose it with certainty. In many cases I find that cavities as seen by the x rays are smaller than the auscultatory signs indicate; in others the results obtained by each method separately closely correspond, this being usually, I think, when surrounding consolidation is small in amount. However damaged the base of the lung may become as a result of tuberculous infiltration, a clear triangular interval is always left between it and the diaphragm represented diagrammatically in Fig. 2 (*a*). This space corresponds to the lower part of the pleural cavity which the lung does not fill except on deep inspiration. Some observers state that the size of the heart is reduced and to this they attach some measure of diagnostic importance. As regards arhythmical tachycardia my observations are in accordance with those of Dr. Espina y Capo[19] of Madrid who says that this sign may be observed "in more than 94 per cent. of cases." In some moderately advanced cases shadows cast by enlarged bronchial glands are clearly visible and excellent radiographs illustrating this have been published. The shadows are irregularly disposed above the heart shadows, often causing apparent enlargement of the left lateral bulge. Calcareous glands appear as opaque nodules.

FIG. 2.



Showing clear space between lung and diaphragm.

The following four cases bring out various points in diagnosis, the numbers corresponding with those in the accompanying table.

CASE 2.—The patient was a man, aged 35 years, who had complained of cough for five months. There was no hæmoptysis but there were weakness and rapid loss of weight. A physical examination of the chest showed anteriorly deficient movement on the left side. The note was slightly impaired over both apices. Harsh irregular breathing and dry clicking crepitations were heard over the right side as far down as the second rib and over the left side as far down as the third rib. Posteriorly, the note was dull over both apices, over which harsh breathing was audible. There were dry crepitations at the end of inspiration over the right interscapular space. A radioscopic examination with the tube posteriorly showed in the right apex a dense shadow to the third rib and on the left apex a lighter shadow to the third rib. With the tube anteriorly it showed on the right apex a shadow down to the fourth rib and on the left apex an opacity at the apex shading off gradually to the fourth rib. There was "roof-tile" appearance of the ribs on both sides. The diaphragmatic movement was with quiet respiration three-quarters of an inch on both sides, while with maximum respiration it was one and three-quarter inches on the right side and one and five-eighth inches on the left side. In this case the signs to percussion, auscultation, and radioscopy correspond very closely.

CASE 6.—The patient was a man, aged 26 years, who had had hæmoptysis two years before. There was no cough, expectoration, or night sweats, but there was loss of appetite and of weight. Physical examination of the chest showed anteriorly an impaired note over the right apex and posteriorly dulness over the right side as far as the fourth rib. There was clear vesicular breathing all over the chest, with no added sounds. A radioscopic examination with the tube anteriorly showed the right side in shadow down to the fifth rib and the left side in shadow down to the third rib. With the tube posteriorly it showed the right side in shadow down to the third rib and the left side in shadow down to the second interspace. The diaphragmatic movement was with quiet respiration half an inch on the right and five-eighths of an inch on the left side, while with a maximum respiration it was two inches on the right side and two and five-eighths inches on the left side. In this case physical signs gave no indication that the disease was other than unilateral; radioscopy shows it to be markedly bilateral and more extensive on the right side.

CASE 8.—The patient was a woman, aged 33 years, who had complained of cough during the previous seven months with profuse expectoration. She had slight hæmoptysis on the day when she came to hospital. Her appetite was fair and there were no night sweats or wasting. A physical examination of the chest showed anteriorly dulness and bronchial breathing in the right front below the clavicle as far as the third rib. A radioscopic examination with the tube anteriorly showed on the right side a shadow as far as the fifth rib and on the left side a shadow as far as the third rib. With the tube posteriorly it showed a shadow at each apex as far as the clavicles and the first rib. The diaphragmatic movement was with quiet respiration half an inch on both sides, while with maximum respiration it was two and one-eighth inches on the right side and two and a half inches on the left side. In this case although physical signs only pointed to unilateral involvement yet on screen examination both sides were seen to be in shadows.

CASE 10.—The patient was a man, aged 30 years. He had no cough, but his expectoration was thick and there were night sweats and wasting but never any hæmoptysis. A physical examination of the chest showed, posteriorly, a prolonged expiration in the right scapular region. No other signs were discovered. Radioscopic examination with the tube anteriorly showed on the right apex a dense shadow to the fourth rib and on the left apex a light shadow to the fourth rib. The diaphragmatic movement was with quiet respiration five-eighths of an inch on the right side and three-quarters of an inch on the left side, while with maximum respiration it was two and three-quarter inches on the right side and three inches on the left side. This is another of these "early" cases which speaks for itself and shows how extremely valuable the Roentgen rays are. The chief points which established the diagnosis were the shadows and limited diaphragmatic mobility. Without the aid of the Roentgen rays this diagnosis could not have been made.

PLEURISY.

Acute pleurisy coming on for the first time, when in the dry stage, apparently casts no shadow. In pleuritic effusion appearances vary according to the nature and amount of the fluid contained in the pleural cavity at the time of examination. A purulent effusion yields a darker shadow than a sero-fibrinous effusion, the shadow in each case being homogeneous and of uniform density all over. Other conditions being equal, the heart is displaced to a greater extent when the effusion is left-sided, and in some cases it lies more transversely than normal.

EMPHYSEMA, BRONCHITIS, AND ASTHMA.

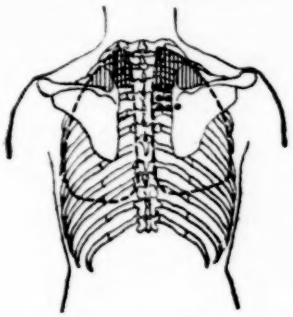
These three conditions are so frequently associated that I have grouped them under one heading.

Emphysema is indicated by brightness of the lungs as a whole; or, if only parts of the lungs be affected, by brightness of those parts. This brightness is intermediate between the normal clearness of the lung and the exceptional brilliancy seen in pneumothorax. Radioscopically, the typical "barrel-shaped" chest is seen, the ribs being raised into the horizontal position of forced inspiration. Whether this brightness be the result of more air or less blood in the lung must remain an open question. The vertical position of the heart should be noted; it is attributed to lowering of the diaphragm and increased lateral pressure on the part of the lungs. A skiagram taken laterally shows the apex of the heart to be no longer in contact with the chest wall, but expanded lung intervenes. This distance is probably as important a factor in causing

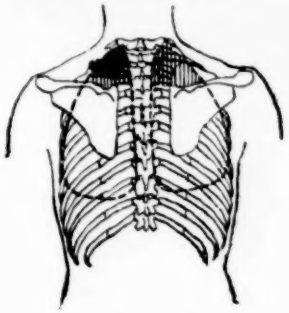
[19] Importance of X Rays in Early Diagnosis of Tuberculosis, Transactions of the British Congress on Tuberculosis, 1902.

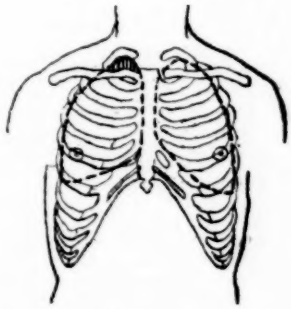
PHYSICAL EXAMINATION.

RADIOSCOPIC EXAMINATION.

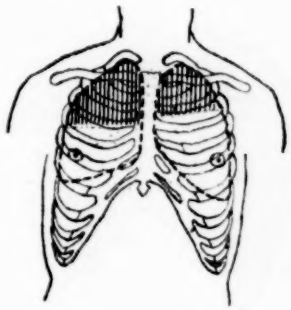


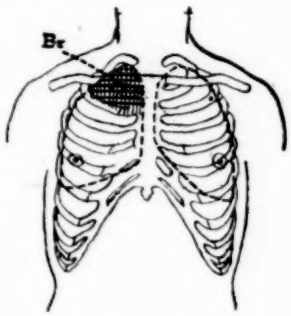
CASE 2.



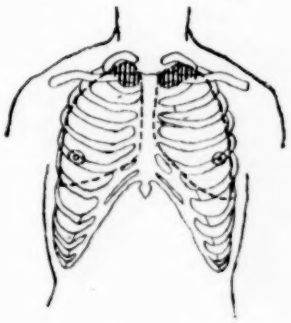


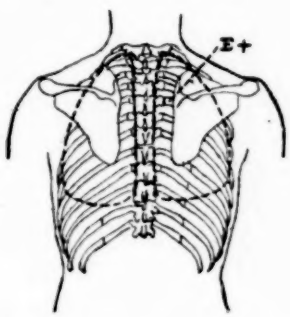
CASE 6.



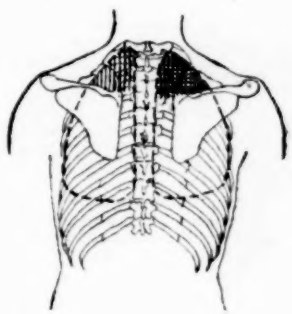


CASE 8.





CASE 10.



||| indicates impaired note.
indicates dull note
:: indicates dry crepitations
Br indicates bronchial breathing.
E+ indicates prolonged expiration

||| indicates faint shadow
indicates dense shadow
▮ indicates opacity

the heart sounds to be absent or muffled as is the interposed lung. A radiograph of a case of bronchitis would do equally well to illustrate the appearances presented by a normal thorax, hence this condition *per se* cannot be diagnosed by the x rays. The appearances presented in long-standing cases of asthma are similar to those of emphysema. In true emphysema and bronchitis the excursion of the diaphragm is limited in the upper part of its course; consequently the dome does not rise to the height which it reaches in health. In some cases of asthma, too, the action of the diaphragm on the affected side has been seen during the paroxysm to be inhibited. After the fit of coughing the affected half of the diaphragm ceases to be immobile and resumes its function. In compensatory emphysema of one lung, however, due to impaired function of the opposite organ, the range of movement is increased in both upper and lower halves.

PNEUMONIA.

In the early stages of pneumonia due to engorgement and exudation a light shadow is cast. Consolidation is manifested as a dense shadow with ill-defined edges, or as opacity. In doubtful cases, especially where pneumonia be suspected, although there are no physical signs in the lungs the Roentgen rays are often of much service. By their aid the existence of a central patch of pneumonia may be revealed. In most cases they are the only means whereby a central pneumonia can be detected at all. The ribs on the unaffected side in a case of unilateral pneumonia are more horizontal than normal and the lung tissue bright, owing to hyperactivity of the sound lung which is practically doing the whole work of respiration. The shadow on the affected side is opaque, but the margin is not strictly limited, as in pleural effusion, but fades gradually away. Movement of the diaphragm in the downward half of its excursion is limited. When in any given case unilateral limitation of the diaphragm is observed we ought always to think of pulmonary tuberculosis, pleurisy, and pneumonia, for to one of these three causes the limitation is most often due. Restoration of diaphragmatic function is found by experience to be a more accurate test of the progress of the disease towards recovery than alteration of the physical signs or diminution of the opacity in the lung.

GANGRENE OF THE LUNG.

Pulmonary gangrene can be diagnosed from fœtid bronchitis by the x rays. Well-defined opacity reveals the existence of the former condition, an indication being thus given to the surgeon as to the site and extent of the gangrenous process which may be cured after costal resection and pneumotomy.

SUMMARY.

In bringing this subject to a conclusion I may say that I have endeavoured to present facts which have come under my own observation, as well as those noted by others, without any undue bias towards one or other method of physical examination. Many more illustrative cases might have been adduced and there are many interesting points upon which, for lack of space, I am unable to touch. It would appear at first sight as if the Roentgen rays presented a royal road to the art of diagnosis and that it is now no longer necessary to undergo much clinical labour in order to acquire manipulative and auscultatory skill: but this view is superficial and the value of the older methods is enhanced by the presentation to the eye of intrathoracic morbid appearances. Hence in many cases one method without the other is incomplete.

It is not claimed that the Roentgen rays are infallible, and, in fact, the like holds good of the older methods. In either case the greater the experience of the physician the more accurate should be his results. In thoracic diseases especially even the most skilled are at times at a loss, and with the radiograph, as with the ophthalmoscope, not until one becomes accustomed to normal variations can a true judgment be formed of those in disease. Moreover, the lack of visual purple in the eyes of some renders them unable to see anything like as much in a skiagram as others can under equal conditions. A good radiograph in some respects may be said to resemble a painting by Turner. Without intuition or previous study the one is almost as incomprehensible as the other, but as we gaze the wealth of detail rises before our vision until finally we are able to interpret the meaning of streaks and shadows that to the untrained eye are meaningless.

CONCLUSIONS.

1. That the Roentgen rays form an important adjunct to the methods of physical investigation previously in use.
2. That unilateral limitation of diaphragmatic movement, as seen by means of the fluoroscope, is often the earliest indication of commencing pulmonary tuberculosis.
3. That by the aid of the Roentgen rays pulmonary tuberculosis can be diagnosed at an earlier stage than by any other means at our disposal.

"Plusieurs fois, la radioscopie a révélé ce que les autres moyens de l'exploration physique avaient laisé inaperçu, ce que même ils ne révélaient pas après un nouvel examen" (Bouchard).

Ventnor.

A BRIEF NOTE ON A BACILLUS IN A CASE OF ULCERATIVE COLITIS.

BY THEODORE FISHER, M.D., M.R.C.P. LOND.,

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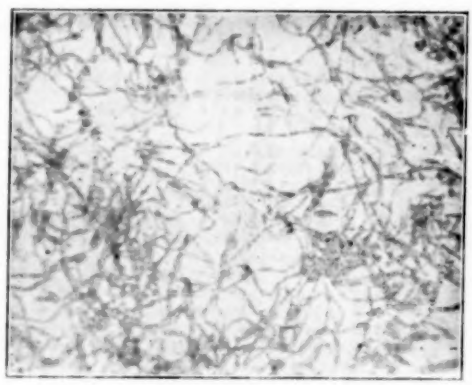
BRIEF and imperfect though the following notes are, the bacillus to which they refer seems to me to have possessed features of sufficient interest to make it worthy of a short notice.

Cultures were taken from the liver of a man, aged 66 years, who had died from ulcerative colitis, where the ulceration of the large intestine was very extensive. Almost the whole of the mucous membrane from the ileo-cæcal valve nearly to the anus had disappeared, only little islets of swollen mucous membrane being here and there present which studded the exposed muscular coat like small polypi. The cultures from the liver were taken on agar, gelatin, and glucose agar. At the end of 24 hours there was little growth in any of the media and for some reason they were not looked at again for another seven days. There were then marked gas formation in the glucose agar, a moderate amount of growth of apparently typical bacillus coli character on the gelatin, and a more scanty growth of similar character, but perhaps a trifle more translucent, on the agar. The agar culture was first microscopically examined. To my surprise a growth similar to that of anthrax was seen. The preparation showed felt-like masses composed of interlacing chains of bacilli. The segments in the chains varied

FIG. 1.



Culture from the liver on agar (eight days' growth), showing interlacing chains of bacilli.

considerably in length and also in breadth. No trace of branching could anywhere be seen. The growth decolourised when stained by Gram's method. The growth on the gelatin was composed chiefly of medium-sized bacilli with rounded ends like the bacillus coli. Many of the bacilli had a barred appearance owing to irregular staining. Mixed with them were a few chains of bacilli which appeared to be the same bacillus as that which had grown on the agar. There were

also a few cocci present. The growth in the glucose agar was similar to that on the gelatin. Plate cultures were taken from the growth on gelatin and the bacilli separated from the cocci which were a form of staphylococcus. The long bacillus seen, however, on the original gelatin culture proved to be the same as the short bacillus present in the plate cultures, since all sizes existed from filaments long enough to stretch nearly across the field to

FIG. 2.

Curious forms in culture on saccharose agar (48 hours' growth).

short, almost coccus-like bacilli. Although in cultures of about 48 hours' growth the filaments presented an unbroken line, in cultures four or five days' old they showed irregular staining and in appearance were similar to the long threads seen in the growth on agar.

Two attempts to grow subcultures on agar and gelatin from the growth on agar failed and then unfortunately the growth became accidentally contaminated. There seemed to

FIG. 3.

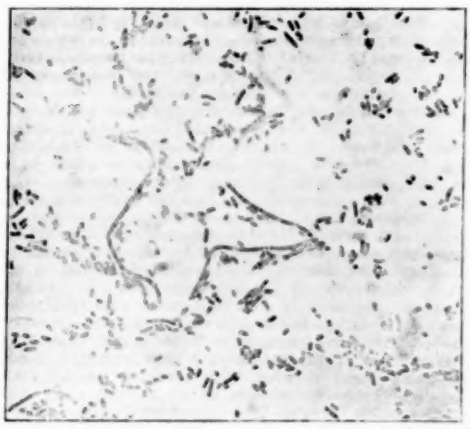


Plate culture on gelatin (48 hours' growth), showing filaments and bacilli of various lengths.

be no doubt, however, that the growth on gelatin, and presumably therefore the growth on agar also, was the bacillus coli. Lactose and saccharose as well as glucose were fermented. In passing it may be mentioned that the growth on saccharose agar showed bacilli of varied shape. These were short round-ended bacilli, diplo-bacilli, and barred bacilli, and in addition to those numerous filaments, many of which had an enlarged spherical extremity at one end and a pointed extremity at the other. In broth there was cloudiness; a sediment and a scum were formed. Numerous long forms were present. On potato the growth had the typical greyish-brown appearance of the bacillus coli. The filaments in that growth were comparatively few in number. Litmus milk was turned red in 48 hours and coagulated. It was interesting to note the persistence of the long forms. After being grown successively on four different media during the space of two months the filaments were still present. It may be added that a similar growth was obtained from the spleen.

Although all the tests for the bacillus coli were not tried there can be little doubt that this bacillus was a variety of that micro-organism. Pathologists seem fairly well agreed as to the cause of acute dysentery, but the bacilli found in association with chronic ulcerative affections of the large intestine appear to have varied considerably in their nature. Varieties of the bacillus coli seem to have been the most common micro-organism found, and allowing that this bacillus is one of those varieties it has seemed to me that the curious felt-like character of the primary growth on agar is worthy of brief record. I have to thank Mr. George Brebner, lecturer on botany at University College, Bristol, for kindly taking the micro-photographs for me.

Clifton, Bristol.

THREE CASES OF CHOLECYSTECTOMY.

BY FREDERIC S. EVE, F.R.C.S. ENG.,
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CASE 1.—The patient was a female, aged 25 years, who was sent to me at the London Hospital by Dr. J. Dunlop of Aveley on April 24th, 1898. On the previous day she was attacked with retching and sharp pain in the right side of the abdomen and noticed a swelling there. On admission the abdomen was somewhat distended. There was tenderness in the right hypochondrium and on palpation a rounded swelling, moving with respiration, was observed in the region of the gall-bladder. A diagnosis of local peritonitis due to empyema of the gall-bladder was made. Operation was performed as follows. The abdomen was opened by an incision over the gall-bladder. This was attached by recent adhesions to the omentum and transverse colon, both of which were deeply injected. The gall-bladder was distended and contained purulent fluid. No gall-stones were found in the gall-bladder or cystic duct, but on account of the patient's serious condition a prolonged examination was not made. The gall-bladder was drained. The patient was discharged at the end of a month, having still a small fistula. On Nov. 3rd, 1898, she was readmitted on account of the fistula remaining open. On the 14th I again opened the abdomen, separated the gall-bladder from numerous adhesions, and found a large stone in the cystic duct which it was impossible to move or to break up. The gall-bladder was therefore removed with the calculus and the wound was closed. Primary union ensued. The patient left the hospital on Dec. 10th and continues in good health.

CASE 2.—A woman, aged 35 years, was transferred to my care by my colleague, Dr. Bertrand Dawson, in July, 1901. Her history was as follows. Since Christmas, 1900, she had suffered with attacks of biliary colic. Four attacks occurred during the six weeks preceding admission. In April jaundice followed an attack of pain. The patient was extremely stout, but on examination under chloroform Dr. Dawson could distinguish an ill-defined swelling suggestive of gall-bladder in the right hypochondrium. Operation was performed on July 5th. The abdomen was opened by an incision along the right linea semilunaris. The edge of the liver extended about three inches below the costal margin, being drawn down by a greatly distended gall-bladder which was aspirated and then incised at the lower part of the fundus. Several gall-stones were impacted in the cystic duct and all efforts to dislodge or to crush them were unsuccessful. Cholecystectomy was performed in the manner described below and a sleeve of peritoneum was then stitched over the end of the duct. The abdominal wound was closed in the usual way. The progress of the case was uneventful. Cultures showed that the fluid in the gall-bladder was sterile. She is at present quite well.

CASE 3.—A woman, aged 59 years, was transferred to my care by my colleague, Dr. F. Warner. Her history was as follows. For three years she had suffered at intervals with attacks of colic, some of which were followed by jaundice. During the last two months the attacks had been more frequent and the patient had hardly ever been free from pain. While in the medical wards she had one attack of pain and on one occasion her temperature rose to 100° F. There was no jaundice. The liver was a little enlarged and the gall-bladder was not palpable. Some rigidity of the upper part of the right rectus and local tenderness were present. Operation was performed on Nov. 1st, 1901. An incision was made through the margin of the right rectus. The gall-bladder was shrunken, hard, covered with adherent

omentum, and attached to the transverse colon. In separating the adhesions the gall-bladder, which anteriorly was soft and rotten, gave way at its junction with the liver. On opening the gall-bladder it was found that the fundus and posterior surfaces were greatly thickened by fibrous tissue, being in places half an inch thick. It contained thin pus but no stones. The mucous membrane was thick, ulcerated, and covered with calculous material. The gall-bladder was removed. The abdominal wound was sutured and a drainage-tube was left in which was removed on the third day. Primary union took place; the subsequent progress of the case was uneventful.

Remarks.—The simplest manner of performing the operation of cholecystectomy is to incise the peritoneum covering the fundus of the gall-bladder at its junction with the liver. A finger can then be inserted between the gall-bladder and liver in the direction of the axis of the former. The separation is readily effected, practically without hæmorrhage. The reflection of peritoneum from each side of the gall-bladder on to the liver is then divided with scissors. This leaves the gall-bladder free. A cuff of peritoneum to cover the stump is preserved by incising this structure transversely on the under surface of the gall-bladder near the junction of the duct, stripping it upwards towards the hilum from the surface of the duct, which is then easily separated with the finger as high as may be necessary. A ligature is applied, the duct is severed, and the mucous surface of the stump is touched with pure carbolic acid. The cuff of peritoneum is sewn over the stump, but if time presses this may be dispensed with.

The indications for removal of the gall-bladder are already fairly well defined and need not be recapitulated. In the future I think it will be more often performed instead of drainage in cases in which the gall-bladder is thickened and contracted. It is quite evident that the gall-bladder is a structure which can be dispensed with without inconvenience, the chief difficulty being for the surgeon to assure himself that there are no stones in the common duct.

The indications for cholecystectomy are less evident when gall-stones are so firmly impacted in the cystic duct that they cannot be dislodged. The stones may be removed by incision and suture of the duct (Mayo Robson). The duct may, however, be ulcerated where the stone lay or there may be a cicatricial contraction above it, both being conditions likely to give rise to future trouble. Further, the operation of suture of the duct and subsequently of the wound in the gall-bladder to the parietes is likely to be more prolonged and I think more difficult than cholecystectomy.

Harley-street, W.

THE PREVALENCE OF PNEUMONIAS IN INFANCY.

BY S. VERE PEARSON, M.B. CANTAB., M.R.C.P. LOND.,
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MOST authorities on the diseases of infancy are now agreed that croupous pneumonia is by no means uncommon amongst infants. The knowledge of this fact, at one time the exclusive property of those who worked at hospitals for children, is even now not so generally recognised as it should be. The importance of realising it is evident at once when the prognosis of this variety of pneumonia is compared with that of broncho-pneumonia; for croupous pneumonia in infants has a good prognosis, while the prognosis of broncho-pneumonia is bad. It is essential, therefore, not only to differentiate the one variety from the other but also to have a correct idea with respect to their absolute and relative frequency. I am anxious to bring forward some data showing that croupous pneumonia is more common during the age of infancy than at any other succeeding age, an opinion somewhat at variance with that at present generally accepted. For, while authorities agree that croupous pneumonia occurs not infrequently at this time of life, they do not hold that it is more frequent then than at any other period of childhood. I shall attempt to show that during the first two years of life croupous pneumonia is not in order of frequency very far below broncho-pneumonia, which is admittedly much more prevalent during infancy than at any other succeeding period.

The prevalence of such a serious disease as broncho-pneumonia is well shown by the effect of its occurrence on the general death-rate. The important part which it plays in affecting the mortality of the community is indisputable. 30 per cent. of all deaths in England and Wales occur in infants under two years. And probably nearly 25 per cent. of these are the subjects of broncho-pneumonia. This figure takes into account those deaths put down to measles and whooping-cough occurring under two years of age, for the majority of these if not dying from broncho-pneumonia at all events die with it, and most of them die directly from it. Take, again, some returns from large hospitals for children where infants are admitted without restriction. Out of 726 consecutive necropsies in the New York Infant Asylum 322—i.e., 43 per cent.—were cases of pneumonia. At the Shadwell Hospital for Children, into which infectious diseases are not admitted, during 1901 out of 274 deaths on the medical side 54—i.e., 20 per cent.—died from pneumonia. During the last five years at the Shadwell Hospital the average death-rate of patients under two years of age admitted for broncho-pneumonia was 64 per cent., being higher than either of the two diseases next in the order of mortality—viz., epidemic diarrhœa and marasmus, the average death-rates from which were 63 per cent. and 46 per cent. There were during this period 261 patients treated in the hospital for broncho-pneumonia, 459 for epidemic diarrhœa, and 177 for marasmus. Broncho-pneumonia, then, is pre-eminently a disease of infancy; this is beyond dispute and generally accepted.

The prevalence of croupous pneumonia cannot be gauged by its effect upon the death-rate, because its mortality is a low one. It is evident that there is still a somewhat widespread impression that this variety of pneumonia is uncommon in infancy, for in looking through recent medical literature one meets with, and meets with fairly frequently, the statement that it is a rare disease at this age. I will give two quotations from several which I have recently come across. M. Pfaunder[1] in an article published in July, 1902, says: "This form of pneumonia is rare in infancy"; and Dr. Clive Riviere[2] in discussing the fibrinous pneumonia of childhood, states that "the disease is certainly uncommon in the first two years of life." On the other hand, it has been said[3]—and my experience would lead me to uphold the truth of this statement—that croupous pneumonia is more frequent in the first two years than in any other succeeding *equal* period of life. On consulting several text-books on the point, however, I find that these do not agree with this opinion. Dr. Emmett Holt[4] considers the third to the fifth year as the commonest age-period for croupous pneumonia. Dr. Morrill, in Keeting's Cyclopædia of Pediatrics, says that the maximum age for liability to croupous pneumonia is between the ages of four and seven years. Henoch[5] regarded the sixth to the twelfth year as the commonest age-period for croupous pneumonia in childhood. Dr. F. H. Hawkins[6] has published a table worked out from a large number of cases showing that croupous pneumonia is commonest between the ages of 20 and 30 years. The statistics of St. George's Hospital, which I have looked up for a small number of recent years, agree with this last view, when they are arranged in periods of ten years. Now statistics are notoriously misleading and those on the point at present raised are very likely to be so, because it is hard to get over certain inherent difficulties. These are those connected with the founding of any conclusions upon hospital practice, where at a hospital for children, on the one hand, adult patients are not admitted, or, on the other hand, where, at a general hospital, the number of infants and children admitted is limited. At a children's hospital, also, not only are the records incomplete on account of the non-admittance of adult patients, but they may be further vitiated by the existence of a restriction, so often present, as to the relative or absolute number of infants taken into the wards. Another difficulty, which will be dealt with below, sometimes arises in the case of infants—viz., the difficulty of making a diagnosis between croupous and catarrhal pneumonia. The following statistics, therefore, based upon the records of the

[1] Münchener Medicinische Wochenschrift, July, 1902.
[2] St. Bartholomew's Hospital Journal, November, 1902.
[3] Coutts: Edinburgh Medical Journal, September, 1902.
[4] Diseases of Children.
[5] Lectures on Children's Diseases, Transactions of the New Sydenham Society, 1889.
[6] Practitioner, vol. i., 1893, p. 434.

East London Hospital for Children, Shadwell, where, however, there is practically no restriction on the number of infants admitted, must be taken for what they are worth. Usually 40 per cent. of the admissions into the hospital are patients under two years old. Moreover, the diagnoses for the most part were made by physicians not only well versed in, but recognised authorities upon, the medical diseases of infants—namely, by the then three senior physicians, Dr. Eustace Smith, Dr. J. A. Coutts, and Dr. Dawson Williams. Now at Shadwell during the three years 1899–1901 311 patients were admitted into the hospital suffering from croupous pneumonia. Of these 121—i.e., 40 per cent.—were under two years of age, 137 were between two and six years (a large proportion of these were patients between two and three years of age) and 53 were between six and 14 years. It is obvious from these figures that amongst children the commonest age-period for croupous pneumonia is during infancy.

Next as to the frequency of croupous pneumonia relative to broncho-pneumonia. From the Shadwell statistics it would seem—and here again my experience leads me to agree with the broad facts revealed by those statistics—that croupous pneumonia in infancy is relatively to broncho-pneumonia rather more frequent than is generally supposed. In a series of cases collected by Dr. Holt he found that 25 per cent. of his acute primary pneumonias during the first two years were lobar and 75 per cent. were broncho-pneumonias. Now in the three years during which 121 patients under two years of age were admitted for croupous pneumonia into the Shadwell Hospital 230 cases of broncho-pneumonia were admitted. Of these 172—i.e., 75 per cent.—were under two years of age, 56 were between two and six years of age, and there were only two patients older than six years of age. It must be borne in mind that these figures are from a hospital where very few infectious diseases are treated; and that consequently the relative frequency of croupous pneumonia appears somewhat higher than is actually the case. The figures, however, show that croupous pneumonia, although not so common as broncho-pneumonia in infancy, does not fall far short of it in the frequency of its occurrence.

The question of the prevalence of the two common varieties of pneumonia in infancy is intimately wrapped up with the distinctions between the two forms. Sometimes the primary broncho-pneumonias are difficult to differentiate from the croupous pneumonias of infancy. In a paper[7] which I read not long ago before the St. George's Hospital Hunterian Society I defined some of the chief points upon which dependence must be placed in making the differential diagnosis between croupous and catarrhal pneumonia in infants. But I was unable there to enter into the question as to the separate entity of each disease. In his book upon the "Diseases of the Organs of Respiration" Dr. Samuel West has brought forward arguments in favour of classifying all the primary broncho-pneumonias of infancy with croupous pneumonia. He advocates the restriction of the term "broncho-pneumonia" to the secondary forms only and holds that many of the primary forms are clinically cases of croupous pneumonia which take on pathologically the broncho-pneumonic lesion because the pneumococcal inflammation is in an infant in whose pulmonary system there are anatomical and physiological peculiarities not present in the adult. It would be entering into the question of etiology too much at the present moment for me to discuss this matter fully, but I can see no *a priori* reason why the pneumococcus cannot set up a true broncho-pneumonia as well as a true croupous pneumonia. If croupous pneumonia in infancy really takes on the broncho-pneumonic type of lesion we are seeking for a distinction where there is no real difference and it would be futile to discuss either the differential diagnosis or the relative prevalence of the two conditions. But I do not agree with Dr. West on this point. To fall in with his opinion is not only inexpedient and uncalled for in the present position of our knowledge as to the etiology of the pneumonias but also dangerous to the precision and accuracy of our outlook upon the clinical aspects of these conditions. There would be a liability to lose sight of the important practical point—namely, the great difference in the prognosis of the two complaints—if this view were generally adopted. It is true that the very high mortality of broncho-pneumonia in infants is less in the case of the primary form than in the secondary; but its mortality rate never reaches that low limit which is associated with the croupous pneumonia of childhood. In practice some cases of pneumonia, diagnosed as croupous, more especially, of course, in those babies who die, are really cases of primary broncho-pneumonia; for in the primary broncho-pneumonia sometimes the disease spreads so rapidly and signs of consolidation become evident so soon that it may simulate very closely acute croupous pneumonia, especially should the signs be limited chiefly to one lobe. The likelihood of mistaking a primary broncho-pneumonia for croupous pneumonia is further rendered possible by its occasionally having a quite sudden onset, by its being sometimes associated with fever of the continuous type, and by the fact that it is usually of pneumococcic origin. But the opposite error of mistaking a croupous pneumonia in an infant for a broncho-pneumonia is equally common, and probably outside hospitals for children it is the commoner mistake. Moreover, another difficulty arises sometimes from the occurrence of intermediate forms. In the majority of these, in all probability, both varieties of pneumonia are present in different parts of the same lung or in opposite lungs at the same time. Dr. Coutts[8] points out that small secondary broncho-pneumonic patches may surround a consolidation of a truly croupous nature, that this is especially liable to occur in infants under two years of age, and that it is one of the most important ways in which difficulties arise in discriminating between the two varieties. But he maintains that "where the symptoms are well marked and typical and this, fortunately, is the case in a greatly preponderating majority of both forms, there is no difficulty in distinguishing between them."

In spite of these occasional similarities between the two diseases and the occasional difficulties in their diagnosis, however, they should never be confounded, for they differ essentially in their natural history, origin, incidence, course, histology, and especially in their clinical manifestations and prognosis. Dr. Pye-Smith[9] points out that because these two forms of pneumonia are occasionally difficult to differentiate the one from the other that is no reason why the attempt to do so should not be made in every case, nor any excuse for ever grouping them together either clinically or pathologically. As well might carcinoma and alveolar sarcoma or rubeola and morbilli be classified under the same head because sometimes they are almost indistinguishable.

The peculiarities of the pulmonary system of a baby no doubt explain satisfactorily why broncho-pneumonia is so common in infancy, why cases arise in which great difficulty occurs in the matter of diagnosis, why intermediate and mixed forms are found, and why broncho-pneumonia may come on as a complication of croupous pneumonia. But it seems to me unnecessary to claim that these peculiarities result in the croupous form of pneumonia taking on the catarrhal type in this class of patient, for I believe that the two types are as essentially distinct in the infant as in the adult. I maintain, then, that true croupous pneumonia is common in infants, that the primary broncho-pneumonias are in the majority of cases perfectly distinct from this, and that even those primary cases which occasionally simulate croupous pneumonia closely should be recognised as distinct from that disease and should not be classified with it but should remain in their present position amongst the broncho-pneumonias.

Serjeant's Inn, E.C.

[7] Practitioner, April, 1903.

[8] Edinburgh Medical Journal, September, 1902.

[9] Clifford Allbutt's System of Medicine, vol. v., p. 104.

RESPIRATORY CRISES IN GRAVES'S DISEASE.

BY J. GORDON SHARP, M.D. EDIN.

GASTRIC crises occurring in the course of Graves's disease are recognised and described, but I cannot recall any description of respiratory crises, yet I have met with at least two cases of very rapid breathing in which the exciting cause was evidently some poison set free in the system. The respirations succeeded each other with rapidity—not less than 60 a minute—the conditions being not unlike that seen in atropine poisoning. A peculiarity of the symptom is the marvellous action which opium, in some shape or other, has in slowing the respirations and restoring the patient to the normal well-being. In describing the two cases I shall omit all unnecessary details and confine my remarks to the salient points.

CASE 1.—A woman, aged 29 years, the mother of four children, had noticed a lump in the neck for two years, but

had not suffered much discomfort till the onset of the present illness when she began to complain of palpitation, cough, and "difficulty of breathing." On inquiry and examination she was found to suffer from vomiting, cough, and pain over the larynx. The pulse was 210; tremor, moist skin, goitre, with throbbing vessels and exophthalmos were present, but the most marked symptom was the very rapid breathing. There was also a tickling cough which was referred to as originating in the throat. There was little expectoration. Half a drachm of paregoric and two minims of tincture of aconite in two tablespoonfuls of water were administered every four hours. The effect was marvellous. In a few hours the respirations fell to normal and the heart and pulse rates came down from 210 to 120, the usual frequency. The woman made a rapid recovery.

CASE 2.—A woman, aged 65 years, the mother of several children, had for years suffered from "spasms" at regular intervals. These attacks were referred to a stomach condition, but I have reason to believe that they were only crises in Graves's disease. She had no exophthalmos but she had an enlarged, throbbing thyroid gland and she had herself observed that the throbbing was always worst when the "spasms" were present. The other signs and symptoms of Graves's disease were observed—tremor, moist skin, palpitation, pulse 120 to 170, and laryngeal crises—but not till the present occasion had the patient suffered from a respiratory crisis. This was supposed to have originated in a "cold." Suddenly she complained of a so-called shortness of breath, although really the condition appeared to be as if some agent were stimulating the respiratory centre at the rate of from 60 to 66 times a minute. There was practically no cough and when the chest was examined nothing could be found to account for the respiratory trouble. The whole expectoration in the course of the night amounted to less than one tablespoonful of clear viscid mucus. At this time there were retching and some little vomiting of stomach mucus, but vomiting was not a prominent symptom. The patient was placed in a warm, moist atmosphere and the usual expectorant mixtures were tried for 48 hours and without benefit, as might be expected. The woman was becoming exhausted simply from the frequency of the breathing. At this period I gave her a one-grain opium pill, the time being midnight, and ordered another to be repeated in an hour. She slept for four or five hours and awoke practically well, and her respirations were reduced to 18 or 20. She bitterly complained that I had not administered the pills earlier.

In searching for an explanation of this increased activity of the respiratory centre I think I am justified in holding that in Graves's disease a poison is thrown into the system which under ordinary conditions is excreted by the ordinary channels and produces only the usual symptoms. Occasionally this poison is present in great amount and the ordinary channels are unable to deal with it sufficiently rapidly and the stomach is called in to aid and one gets then a gastric crisis. Less frequently the poison is present in great quantity or the excretory organs are unable to deal with it and the poison reaches the respiratory centre in great quantity and then one meets with respiratory crises. I know this view is open to objections, but it has the virtue of feasibility. Supposing it to be poison, then it belongs to the atropine, digitalis, or strychnine group as far as its action on the respiratory centre is concerned. Now, opium is antagonistic to this group—that is to say, it has the opposite effect on the respiratory centre—and hence its curative action in the condition which I have detailed.

Leeds.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum allorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proemium.

BRITISH HOSPITAL, BUENOS AYRES.

A CASE OF LIPOMA OF THE CÆCUM.

(Under the care of Dr. JOHN O'CONOR.)

A WOMAN aged 45 years, was admitted into the British Hospital, Buenos Ayres, on Feb. 5th, 1900, with the following history. In October, 1899, she first complained of indigestion with some pain in the right abdomen near the umbilicus, for which her medical attendant prescribed liquid diet and a mixture of soda, bismuth, and magnesia. She gradually lost flesh and the pain became more intensified, accompanied by flatulence, nausea, and a heavy feeling in the epigastrium after food. On Jan. 3rd, 1900, she vomited for the first time; afterwards this became a matter of frequent occurrence, but blood was not at any time observed in the vomited matter. She had great difficulty in getting her bowels to act; the stools always appeared to be normal in character. On the 28th she felt a lump for the first time in the region where she had previously complained of pain. On admission a distinct hard moveable tumour of about the size of a Tangerine orange was felt one inch below and to the right of the umbilicus; it was tympanitic on percussion and was tender to the touch. As general examination revealed no other organic affection the diagnosis seemed to point to a pyloric tumour.

On Feb. 6th chloroform was administered and a vertical incision was made through the right rectus; on opening the peritoneum a coil of large intestine presented, which turned out to be the ascending colon with a very moveable cæcum. The latter contained a large ovoid mass which seemed to occupy its whole lumen. Taking into consideration the absence of a doughy feeling and the immobility of the swelling inside the bowel, a two-inch incision was made into the cæcum. A gangrenous mass presented, which consisted of sloughing mucous membrane covering a large fatty tumour imbedded between the mucous coat and muscularis mucosæ in a free zone of bowel wall. The gangrenous mucous surface was liberally excised, the fatty tumour was enucleated, and the cavity was as far as possible obliterated by catgut sutures. The parts having been thoroughly irrigated the cæcotomy wound was closed by two rows of continuous silk sutures and the cœliotomy one by tier sutures. An uninterrupted convalescence ensued and the patient left the hospital a month later. When seen in October, 1902, she reported that her condition had continued normal since the operation.

Remarks by Dr. O'CONOR.—As the above affection is somewhat rare, possibly the notes of the only case I have met with in a series of over 1000 general abdominal operations may be of some interest. Taking into consideration the age of the patient, the gradual onset of gastric symptoms, the loss of flesh, and the site of the tumour, I was agreeably disappointed in not finding some serious lesion in the pylorus. Yet on reflection the latter might possibly have been eliminated if full value had been accorded to the absence of gastric dilatation and the history of old-standing stomach trouble.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

The Treatment of Aneurysm by Subcutaneous Injection of Gelatin.—A Case of Aneurysm of the Abdominal Aorta treated by the Introduction of Silver Wire.

A MEETING of this society was held on June 23rd, Mr. ALFRED WILLETT, the President, being in the chair.

Dr. GUTHRIE RANKIN read a paper on the Treatment of Aneurysm by Subcutaneous Injection of Gelatin. After alluding to the work done by Lancereaux and others in connexion with the cure of aneurysm by gelatin Dr. Rankin showed that though not universally accepted there was considerable evidence to prove that the results were due to an increased power of coagulability produced by the gelatin on the blood. The best results were obtained when the use of gelatin was combined with rest in bed, restricted diet, and iodide of potassium given internally. The method of treatment by gelatin subcutaneously had not so far been extensively adopted in this country. Lancereaux advocated the injection of 250 cubic centimetres of a saline solution containing 2 per cent. of gelatin and considered that a minimum of from 12 to 15 injections was necessary. Huchard preferred a 1 per cent. solution as being safer. In four cases treated by Dr. Rankin at the Dreadnought Hospital 100 cubic centimetres of a 2 per cent. solution of gelatin were injected at each sitting after the first and the average number of injections was 17. The inner aspect of the thigh was chosen as the most convenient situation for the operation. The solution consisted

of one ounce of gelatin and 131 grains of chloride of sodium in 50 ounces of sterile distilled water. Details were given of the four cases treated, in three of which the aneurysm was thoracic, while in one it was abdominal. In all four cases there was more or less marked improvement. The following conclusions were arrived at:—1. That gelatin injections, given with proper precautions, were safe. 2. That they produced alleviation of all the subjective and many of the objective symptoms. 3. That the relief of symptoms was probably to be explained by shrinkage of the aneurysmal sac and consequent diminution of pressure on surrounding parts. 4. That such diminution could be demonstrated in three out of the four cases treated. 5. That the after-histories afforded evidence of the permanent nature of the beneficial results of the treatment.—Dr. R. MAGUIRE had treated eight cases of aneurysm by gelatin injections. In seven of these there was considerable improvement; the remaining case was practically relieved before coming under his care. In one case an aortic regurgitant murmur present at the commencement of treatment disappeared after the third injection, showing that it was due to stretching of the aorta and not to disease of the valves. Another case in which the aneurysm appeared ready to burst externally was notably relieved after a course of six weeks' treatment. He alluded to the advantages of gelatin injections over the ordinary methods of medical treatment and in referring to the risk of tetanus to which one of his patients succumbed he laid stress on the importance of boiling the solution of gelatin for ten minutes, whereby the vitality of tetanus spores, commonly present in commercial gelatin, was readily destroyed. He attributed the rise of temperature to the introduction of a foreign proteid into the blood and drew attention to the risk of clot-formation elsewhere than in the aneurysm if other arteries were diseased.—Dr. F. H. HAWKINS had had experience of gelatin injections in one case in which the injection was followed by a rigor with collapse and persistent vomiting for three days. The method was not free from dangers other than the risk of tetanus.—Dr. A. J. WHITING asked Dr. Maguire how long a period intervened between the first injection and the onset of symptoms of tetanus. He also asked whether the coagulability of gelatin was impaired by boiling.—Dr. MAGUIRE, in reply to Dr. Whiting, said that one week elapsed between the first injection and the onset of tetanus and that boiling did not impair the coagulability of gelatin.—Dr. RANKIN, in reply, said that in none of his cases were there symptoms at any time to cause anxiety. He had not observed coagulation elsewhere than in the aneurysmal sac.

Mr. D'ARCY POWER communicated a paper by himself and Mr. G. H. COLT on a case of Aneurysm of the Abdominal Aorta treated by the Introduction of Silver Wire with a description of instruments invented and constructed to facilitate the introduction of wire into aneurysms. The patient was a man, aged 29 years, who had acquired syphilis at the age of 17 years and had only been treated with mercury for a short time. He had noticed a pulsating swelling in the right side of his abdomen for two and a half years and had been constantly under treatment. On five occasions he had received injections of gelatin in the gluteal region without any marked alteration in the progress of the aneurysm. The sac of the aneurysm was extremely thin in places and as the life of the patient seemed to be in danger it was determined that the sac should be exposed and the artery from which it sprang should be ligatured, or if this were impracticable the sac should be filled with silver wire. The swelling was diagnosed as an aneurysm of the cœliac axis or of one of its branches. The sac was accordingly exposed and as it was impossible to isolate it 80 inches of silver wire, with a clotting surface of 3·7 square inches, were introduced by means of an instrument devised and made by Mr. Colt. The actual introduction of the wire only took two and a half minutes and there was no trouble in closing the hole in the sac with a few point sutures. The patient had a good night after the operation and was fairly comfortable on the following day. His pulse continued to rise, however, and he died 50 hours after the operation. The post-mortem examination showed that the aneurysm sprang from the abdominal aorta just below the diaphragm. The sac was full of recently clotted blood in which the wire was entangled. On cutting across the aorta seven inches of the wire were found projecting upwards into the arch of the aorta. The rest of the organs were normal and the heart was healthy except for a patch of adherent pericardium. The instruments invented and constructed by Mr. Colt were three in number. The first instrument worked on the principle enunciated in the following terms: "If what is known to the mechanical engineer as a milling tool be made to revolve at a less distance than the diameter of the wire employed from the inner surface of the dorsal wall of a hollow tubular needle, the ventral wall of which has been cut away, the milling tool will grip the wire between itself and the needle and will wind it off the reel and drive it through the needle with a force only limited by the force at the disposal of the operator. It will, at the same time, snag or mill the wire." To carry out this principle a quarter-curved tubular needle was imbedded for about two inches of its length in the substance of a brass carrier. A semicircular incision was then made down to it through the brass so that the lumen of the needle was exposed. A milling tool was introduced at this spot to compress the wire with a steady grip as it passed through the needle, the pressure being made between the milling tool and the dorsal wall of the needle. The mounting of the needle was then bolted to the mounting which carried the milling tool, and it was then so geared up as to give the operator room to use the instrument without getting his hands too near the wound. A second hole was made in the tubular needle distal to the milling tool, and along this a stiletto was passed to block the hollow needle to its point whilst it was being pushed into the sac of the aneurysm. The instrument was further provided with a handle by which to hold it and with a second handle to revolve the milling tool. The second instrument differed in many important respects from the first. There were no gear wheels and the milling tool was driven direct. The needle was sufficiently long to remove the mechanism to a distance from the wound and the instrument was capable of taking a thinner wire than that taken by the one first invented. No stiletto was required and by an ingenious but simple device the wire, which was introduced in coils, could be divided into lengths at the will of the operator without withdrawing the needle from the sac of the aneurysm. Another method of wiring aneurysms consisted in the introduction of one or more cages of steel wire. These cages were so constructed as to form cylinders when they were compressed and the cylinders could be passed through a fine cannula into the sac of an aneurysm where they would immediately expand. The paper was illustrated by the epidiascope.

OPHTHALMOLOGICAL SOCIETY.

Subconjunctival Fistula Formation in the Treatment of Chronic Glaucoma.—Melano-sarcoma of the Upper Lid.—Innervation of the Orbicularis Palpebrarum Muscle.

AN ordinary meeting of this society was held on June 11th, Mr. WILLIAM W. LANG, the President, being in the chair.

Major H. HERBERT, I.M.S., read a paper on Subconjunctival Fistula Formation in the Treatment of Chronic Glaucoma, either by producing a subconjunctival prolapse of the iris or by infolding the conjunctiva. The report dealt with 130 cases in which iris was left prolapsed under a conjunctival flap and in all but 18 eyes a small iridectomy was combined. A large number of these eyes were in an advanced stage of the disease and were therefore not very hopeful when an iridectomy only was done. For this reason a large incision was dangerous. The visual results of operations done from six months to upwards of three years previously were given. Only one eye had suffered from late infection and this gave way rapidly to treatment. In two eyes there was iridocyclitis immediately following the operation. In one case it caused partial occlusion of the pupil and in the other, which was somewhat neglected, it led to sympathetic ophthalmia with total loss of both eyes. The sight of another was lost through protracted delay in filling of the anterior chamber. These serious early complications were less numerous than when simple iridectomy was done. It was claimed that a filtering cicatrix could be obtained with certainty and that in some cases this was the only way to relieve the tension. At any rate, the risk was far less than if the tension was not relieved by the iridectomy. On the whole, the visual results were much better than could have been expected from typical iridectomy. Many cases of so-called atrophy of the optic nerve after operation were in reality due to unrelieved tension. A fistulous cicatrix was indicated (1) when iridectomy had already failed;

(2) where it was likely to fail, such as in advanced cases; and (3) when the patient was not expected to return for a second operation if one was required. The danger to the other eye was very remote and would probably yield to mercurial treatment or enucleation. The connexion of the iris with the prolapse could, if desired, be severed by a subconjunctival sclerotomy, cutting up through the attached base of the iris. The second method, by a subconjunctival infolding into a small sclerotomy wound, had proved effective in a number of cases. The aim was to establish a fistula unconnected with the uveal tract. By a special suture the flap could be kept in place long enough to keep separate the lips of the wound so as to form a permanent subconjunctival fistulous tract. The ten cases in which this was done were of too recent date to give a correct appreciation of its value. Other successful cases of conjunctival infolding without suture had been under observation for periods up to nearly two years. Many other attempts, however, failed to relieve tension through the flap not remaining infolded long enough; and in one eye the tension was far too much reduced. Apparently infective mild iritis came on and eventually detachment of the retina. 23 operations were performed without suture or with imperfect suture.—Mr. PRIESTLEY SMITH, Mr. E. TREACHER COLLINS, and Sir ANDERSON CRITCHETT made remarks, and Major HERBERT briefly replied.

Mr. H. WORK DODD communicated a paper on a case of Melano-sarcoma of the Upper Lid. The patient was a woman, aged 83 years, who had noticed a lump in the upper lid for six weeks. There was no pain at first but latterly there had been some. The tumour was situated in the centre of the upper lid and was of about the size of a hazel nut; there was no redness, œdema, or tenderness. On the under surface the growth was soft, jelly-like, and vascular. The eyeball was almost hidden by the growth but its movements were free. The patient had several wart-like growths about the body. The contents of the orbit were removed, the lower lid alone being left. A Thiersch graft was afterwards applied. Only 45 cases of primary sarcoma of the eyelid had been recorded: ten were melanotic and four of these originated in the palpebral conjunctiva. Van Duyse stated that: (1) of the few arising from the palpebral conjunctiva most were pedunculated, while those from the skin or mucous membrane were papillary in form; and (2) these attained a considerable size before extending into the surrounding tissues. In this case the tumour was pedunculated and it had affected chiefly the free surface, leaving the skin, orbicularis muscle, and tarsal plate intact and healthy. All these circumstances pointed to its origin being in the palpebral conjunctiva.

Mr. N. BISHOP HARMAN read a paper on Innervation of the Orbicularis Palpebrarum Muscle. He outlined the observations which had led Mendel to the formulation of his hypothesis "that the frontal and orbicularis muscles, although peripherally supplied by the facial nerve, were 'eye muscles' and form the 'oculo-facial' group whose central innervation is the oculo-motor nucleus." He contended that the operation of excising these muscles in young animals which had been followed by a diminution of the cellular elements of the third nerve nucleus did not prove that the lost nerve cells were the central connexions of the nerve to the excised muscles, for by the very conditions of Mendel's operation—by the stitching the eyelids together—he had interfered with at least one proper eye muscle connected with the third nucleus, the levator palpebræ superioris, into the region of the nucleus of which Mendel sought to attach the orbicularis. Mr. Harman traced the ancestry of these facial muscles. In man there were superficial and deep layers of muscles more or less differentiated owing to the vigorous facial action of man; in lower animals—for example, lemurs—there were simple muscle sheets. In the sharks the earliest representatives of these muscles were found in connexion with well-developed eyelids and nictitating membranes. By an embryological investigation he had shown that these muscles were primarily the muscles of the spiracle gill which had been dragged forward for the service of the eye. In these fish the innervation was from the facial complex, the nerve proper to this gill. By reference to the work of Gaskell, which pointed out the different values of segmental nuclei, he showed how difficult it was to conceive the transference of the innervation of a "splanchnic" muscle from a splanchnic nerve and a splanchnic nucleus such as the seventh to a somatic nucleus such as the third; the thing was without parallel. In the phenomenon not rarely found in man, that of "associated jaw-winking movements," of which he exhibited a case, there was evidence that the arrangements found in the fish still held good for man. In these cases there was partial ptosis of one upper lid; on putting into action the external pterygoid of the same side the eyelid was promptly elevated. This he showed was an "atavistic anomaly," the occurrence of that associated movement between jaw and gill which was always seen in the breathing of fishes. When the mouth of the fish opened the operculum covering the gills was relaxed. In these cases of jaw-winking movement in man, when the deep gill muscle (pterygoid) contracted there was an associated relaxation of the superficial gill muscle (orbicularis) which allowed the weak levator to pull up the lid.

ANATOMICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—The summer meeting of this society was held in Liverpool on June 19th and 20th. The scientific proceedings included the exhibition of a large number of specimens in the practical anatomy rooms in University College and several papers and demonstrations which were given in the lecture theatres. Amongst the exhibits were the following: models prepared by Professor Patten, illustrating the Visceral Anatomy of the Hainan Gibbon and the Thoracic and Abdominal Viscera in Man; a model prepared by Mr. F. W. Jones from sections of an early Human Embryo; a series of Radiographs prepared by Dr. C. Thurstan Holland and Dr. David Morgan; specimens of the Circle of Willis, prepared by Dr. R. E. Kelly; the Brain and some Photographs of the Cord of the Porpoise, by Dr. Waterston; and a specimen of the Human Lung, by Dr. T. R. Bradshaw who exhibited a number of preparations and drawings made by Dr. A. T. H. Waters when writing his Fothergillian Prize Essay for 1859 on the Anatomy of the Human Lung. The preparations showed the arrangement of the air sacs branching off from the terminal bronchial tubes. Special attention was drawn to Dr. Waters's observations which proved at that early date that the blood in the bronchial arteries returned to the left side of the heart by way of the pulmonary veins and not to the right side by the bronchial veins, which merely returned blood from the structures at the root of the lung.—Dr. T. H. Bryce, whose work in connexion with karyokinesis is well known, gave a lantern demonstration of the Cells of the Embryo of the Lepidosiren.—Professor J. Symington brought forward some further work on the Relations of the Deeper Parts of the Brain to the Surface, a subject on which he had been engaged for some time past.—Professor A. Thomson gave a most interesting and highly suggestive paper on the Evolution of Man's Cranial Form which he illustrated with some ingenious models. The paper gave rise to an excellent discussion, in which Sir William Turner, Professor D. J. Cunningham, Professor G. D. Thane, and many others took part.—The work on June 19th terminated with a short account of the important investigations now being carried out by Dr. A. W. Campbell of Rainhill Asylum, Lancashire, which showed that there existed in the cerebral cortex a direct correlation between physiological function and histological structure.—On June 20th Dr. C. Addison gave some further information on the Surface Marking of the Abdominal Viscera.—Professor Arthur Robinson showed some specimens illustrating the Development of the Base of the Cranium and gave a brief outline of the conclusions at which he had arrived; he also gave the results of his observations on the Development of the Vitreous Body.—Professor A. H. Young and Dr. Peter Thompson read a paper dealing with the Development and Morphology of the Renal Arteries, with Horseshoe Kidneys, and with the Ventrally-situated Pelvis of the Ureter, of which deformity they showed several specimens.—Mr. Lickley read a paper on the Relations of the Seventh and Eighth Ribs to the Sternum in Man.—Mr. J. Cameron gave a lantern demonstration of Sections of Amphibia which showed the pineal body to be developmentally an amesial structure.

PLAISTOW AND CANNING TOWN MEDICAL SOCIETY.—A meeting of this society was held on May 27th, Mr. Percy Rose being in the chair.—Mr. J. Jordan Harvey exhibited a Large Bi-lobed Placenta, the cord being inserted at the junction of two equal lobes.—Mr. Rose showed a Retention Cyst of the Choroid Plexus.—Dr. L. A. Smith delivered an address on Acute Abdominal Cases in General Practice in which he pointed out the extreme difficulty in diagnosis which these cases at times presented. He urged the importance of early and exact diagnosis and stated

concisely the points of value in determining the question of operative treatment.—A short discussion followed and a hearty vote of thanks to Dr. Smith for his very practical address brought the proceedings to a close.

Reviews and Notices of Books.

A Treatise on Diseases of the Eye, Nose, Throat, and Ear for Students and Practitioners. By Various Authors. Edited by WILLIAM CAMPBELL POSEY, A.B., M.D., Professor of Ophthalmology in the Philadelphia Polyclinic; and JONATHAN WRIGHT, M.D., Laryngologist to the Brooklyn Eye and Ear Hospital. London: H. Kimpton. In two volumes, large 8vo. Vol. i., pp. vi. + 689; vol. ii., pp. 549. Price 32*s.* net.

THE plan of dividing a text-book into chapters or sections and confiding each division to a separate writer, with strict limitation of space, is from many points of view a good one. It has the disadvantages of some overlapping and of some want of unity, but these defects are more than compensated by the possibility of selecting authors who are well versed in the subjects assigned to them and are therefore qualified to speak with the authority of experience and who, as a rule, are not unwilling to compress into a reasonable compass the results of their reading and practice.

The first volume of this imposing treatise is devoted to the eye and is divided into 15 chapters, each from the pen of a different writer. It is illustrated by 19 plates and 358 woodcuts. The type is clear and good and the book contains singularly few clerical errors. Amongst the contributors we are glad to see the names of Mr. W. T. Holmes Spicer, one of the ophthalmic surgeons at St. Bartholomew's Hospital, London, who has undertaken the important chapter on Diseases of the Retina, Optic Nerve, and the Cerebral Origin of that nerve, and of Mr. E. Treacher Collins of the Royal London Ophthalmic Hospital, by whom the chapter on Glaucoma has been written, a subject to which, amongst others, he has devoted much attention. A Canadian surgeon, Dr. R. A. Reeve, describes the Diseases of the Orbit, Lacrymal Apparatus, and Lids, and the remaining chapters are written by American surgeons, Dr. W. C. Posey of Philadelphia discussing the examination of the eye; Dr. W. N. Suter of Washington, the physiology of vision; Dr. A. Duane of New York, refractive errors in general; Dr. Casey A. Wood of Chicago, the motions of the eye and their derangements; Dr. John Weeks of New York, the diseases of the conjunctiva, cornea, and sclera; Dr. H. von Würdemann of Milwaukee, the embryology of the eye, the anomalies, diseases, and injuries of the iris, ciliary body, choroid, and vitreous; Dr. H. Gifford of Omaha, Nebraska, sympathetic ophthalmia; Dr. E. C. Ellett of Memphis, Tennessee, diseases of the crystalline lens; Dr. Elmer G. Starr of Buffalo, New York, disturbances of vision without apparent lesion; Dr. C. F. Clark of Columbus, Ohio, the eye in its relation to general diseases; Dr. Clarence Veasey of Philadelphia, general preparation for operations upon the eye; and Dr. Edward A. Shumway of Philadelphia, the technique of the pathological and bacteriological examinations of the eye.

It is difficult within the limits of a review to refer to more than one or two of the chief divisions into which the whole of ophthalmology has here been cast, but as special attention is called in the preface to the chapter on the Eye in its Relation to General Diseases by Dr. C. F. Clark we turned to the pages of that essay and can recommend its perusal to every student and practitioner. Dr. Clark commences with "anæmia" which, he points out, is secondary to so many and such diverse pathological conditions that it is necessary to observe caution to avoid confusing the effects of anæmia proper with those of the disease on which it depends, and he believes that there is probably no one constitutional condition which more frequently plays a part in producing the various forms of asthenopia. He has little doubt that the early and judicious use of those means—hygienic, dietetic, and medicinal—which tend to overcome anæmia could in a large number of instances delay for many years the necessity for correcting the low grades of hyperopia and astigmatism which are so important a feature in the practice of ophthalmology as seen in America. With this view we are quite in accord. At the same time the young American is probably more sensitive to slight defects in the refraction of the eye than the average European child or youth and he complains and seeks for relief at an earlier period. It is only gradually dawning on school teachers, and still more slowly on parents, that a low position in class of an otherwise intelligent child is dependent on imperfect vision as a rule and it is long before it is found convenient to take the child to an ophthalmic hospital or, when they have been ordered, to obtain the necessary glasses. The following remarks, too, are dictated by good sense and express well what has passed through the mind of every ophthalmic surgeon of experience. "The general asthenia which accompanies the anæmic state manifests itself as asthenopia, and this may be conjunctival, ciliary, muscular or retinal. It not unfrequently happens that after a prolonged struggle on the part of the ophthalmic surgeon to correct properly hyperopia, astigmatism, and muscular imbalance by means of spherical, cylindrical and weak prismatic lenses, and to relieve obscure reflex symptoms such as headache apparently due to eyestrain and obstinate photophobia and conjunctival irritation by appropriate treatment, it is found that large doses of a ferruginous tonic and a properly regulated life, with an abundance of out-of-door exercise, bring about complete relief from all the distressing symptoms, rendering glasses for the time being unnecessary. On the other hand it frequently happens that all of the best directed plans of general treatment completely fail when they are not supplemented by the most painstaking correction of all such errors of refraction and muscular imbalance." Dr. Clark discusses the affections of the eye associated with diseases of the vascular, respiratory, and digestive organs, and with the urinary, sexual, cutaneous, and nervous systems, and gives a good account of the relations of the eye to syphilis, which disease, it appears, only produces absolute loss of sight in about 2 per cent. of cases of blindness from all causes.

The chapter by Dr. Casey Wood on the Motions of the Eyeball and their Derangements will, if read carefully, supply all requisite information in regard to the defects of mobility which, formerly designated outward or inward, convergent or divergent squint, have been re-named collectively, heterotropia, and more precisely differentiated under the terms of esophoria, exophoria, cyclophoria, anaphoria, cataphoria, and the like. The symptoms and pathology of each form are given in detail. Dr. Wood approves, in cases where shortening of the muscle is required, the method devised by Dr. Frank Todd of making a "tuck" in the tendon, for the accomplishment of which a specially formed instrument resembling a pair of forceps with crossed legs is used.

Dr. Weeks, in his instructive chapter on the Diseases of the Conjunctiva, Cornea, and Sclera, adopts a new classification of conjunctivitis, dividing the varieties of this disease into the specific forms typically represented by gonorrhœal and diphtheritic conjunctivitis and the non-specific forms in which no specific cause has been hitherto recognised, as may be observed in simple and follicular conjunctivitis and in trachoma. An excellent drawing, after Orth, of the microscopic appearances after double staining of a section of trachomatous nodules is given and there are also useful drawings of the micro-organisms that have been found in various affections of the conjunctiva.

The subjects of Diseases of the Crystalline Lens and Cataract are treated by Dr. Edward Ellett at considerable length and very sensibly. No space is wasted in describing in wearisome detail the various forms and modifications of opacities of the lens, but after a few pages devoted to the structure of the lens, its embryology, the congenital anomalies which it presents, and the effects of wounds and injuries, the author proceeds at once to the consideration of cataract. The changes that may be observed in the structure of the lens are given and are illustrated by some excellent micro-photographic drawings from sections made by Dr. E. S. Thomson of the Manhattan Eye and Ear Hospital. In regard to the treatment of cataract Dr. Ellett considers "absorption treatments" and the administration of drugs to be futile measures, though alteratives may be occasionally beneficially prescribed. He thinks the utility of "ripening operations" in cases of immature cataract to be questionable. He assigns reasons which render it, in his opinion, advisable to operate on one eye, notwithstanding that the other is clear. He considers that the safest mode of operating for extraction is a preliminary iridectomy followed by removal of the lens after some weeks. The account of the accidents that may occur in the course of the operation is good and complete. The strength of the solution of cocaine to be instilled into the eye should have been given. We have known a 20 per cent. solution to be used by a nurse unaccustomed to ophthalmic operations with disastrous results. A 4 per cent. solution dropped in at intervals of half a minute for five minutes is usually sufficient to secure complete insensibility. The great importance of an exceedingly sharp knife in facilitating the operation might have been also insisted upon. Scarcely sufficient stress is laid upon the danger attendant upon the operation of needling the capsule in cases of secondary cataract. Dr. Ellett only remarks by way of warning that "provided the vision is not better than $\frac{1}{10}$, and the reduction of vision is not manifestly due to some other cause, the membrane should be divided," and various modes of dealing with it are described. It might easily be regarded by the young practitioner as a trifling operation that may be undertaken, providing no inflammatory symptoms are present, without misgiving. But the practised ophthalmic surgeon is well aware from bitter experience what dangers lurk in the simple proceeding of needling. Many a surgeon and many a patient have reason to regret that they had not left "well alone," and the dangers as well as the appropriate treatment might have been given, we think with advantage, in fuller detail.

In conclusion, we consider that amongst the many treatises on ophthalmology that have been recently published Vol. I. of Dr. Posey's and Dr. Wright's Diseases of the Eye, Nose, Throat, and Ear will occupy a distinguished place and may be regarded as an authoritative and altogether trustworthy exposition of the present condition of ophthalmology in the English language. We shall consider Vol. II., which deals with the Nose, Throat, and Ear, in a future issue.

Physical Chemistry: for Physicians and Biologists. By Dr. ERNST COHEN, Professor of General and Inorganic Chemistry in the University of Utrecht; authorised translation from the German by MARTIN H. FISCHER, M.D., Instructor in Physiology in the University of California. New York: Henry Holt and Co. 1903. Pp. 343.

NONE can dispute the importance of a knowledge of physical chemistry if the great cause of medicine is to be advanced and happily there are signs of medical men becoming convinced of this fact and in accordance with this conviction of giving that attention to the subject which it demands. The present volume has been written in response to the request of a number of physicians to give in a series of lectures a *résumé* of those subjects in physical or general chemistry which are of importance in medicine. In all there are 14 lectures and the subjects comprise reaction of velocity, equilibrium, osmotic pressure, the molecular weight of dissolved substances, cryoscopy, and the theory of electrolytic dissociation and its applications. In a word, we find in this volume the scientific interpretation of well-known physical conditions and facts and as the nature of these becomes more understood so we may hope will treatment become less empirical. A drawback to the study of the exact scientific aspect of many physiological questions for the general practitioner, however, exists in the fact that a certain amount of mathematics must be studied and not every person has a mathematical mind. We do not know, however, a more suitable book to recommend than the one before us to those who are bent on possessing an accurate scientific idea of the many phenomena taking place in the human machine.

The Elements of Experimental Phonetics. By EDWARD WHEELER SCRIPTURE. London: Edward Arnold. New York: Charles Scribner's Sons. 1902. Pp. 627 and 28 Plates. Price 21*s.* net.

IN this book Mr. Scripture has brought together a very large body of facts bearing upon the study of speech and the work is original in the sense not only of placing the author's own observations on record, but in the still more important sense that it gathers and focuses rays from many and widely separated lines of inquiry, thus bringing to light a new object of research. The mechanism of sound records, such, for example, as the Marey tambours, the gramophone, sensitive flames, and the like, forms one large division of the work. Another is devoted to the physiology of hearing and in close connexion with this comes a third branch—namely, the psychology of the perception of sound. A fourth division of the work is concerned with the mechanism of speech—that is to say, of the organs of speech—and treats incidentally of the anatomy of the mouth, the nose, and the pharynx; and a fifth deals with phonetics strictly so-called, that is to say, the elementary sounds, interruptions, and other audible signals of which vocal speech is built up. On all these subjects the author has read widely and to very good purpose and his book will form a worthy addition to the bicentennial publications of the Yale University. Indeed, to the study of its subject it is an indispensable aid. But it betrays haste in its preparation—as is perhaps natural in a work published under pressure of a ceremonial occasion. Experiments are described in great detail even when they are, as we may say, only half translated. For example, a large proportion of Mr. Scripture's experimental facts are drawn from German observers and need much explanation to render them intelligible to English readers. Thus the association of ideas is illustrated by the imperfect appreciation by a German experimenter of a German word half seen or incorrectly heard. Such experiments can be followed only at a great distance by an ordinary English reader and should be repeated for his benefit with the assistance of an English subject and English speech. The same kind of incompleteness runs through the entire work. A copious use of phonetic symbols—letters turned upside down and such-like conventional signs—is, of course, indispensable in such a work. But these symbols need explanation and receive much less than they require. An explanatory table appended to the book does something for the reader in this respect, but grudgingly. For instance, few readers will be greatly helped by the explanation that the symbol ɸ (printed in grotesque style as here) represents the Japanese "f," but Mr. Scripture vouchsafes no more. This is but an extreme instance of the obscurity, due to

deficient explanation, which renders much of the book more or less unintelligible, and to such an extent as to be a serious flaw. But that notwithstanding, we have here a valuable contribution to a difficult and comparatively neglected line of study to which all students of the mechanism of speech will hereafter have recourse and from which much useful information and many illuminating hints may be drawn both by medical men to whom the phenomena of speech are symptoms and by teachers of languages to whom they are items in "the daily round, the common task."

La Gastro-enterostomia, Metodi Operativi, Indicazioni, Risultati. (*Gastro-enterostomy, Methods, Indications, and Results.*) Da Dott. ARISTIDE MATTÒLI, chirurgo primario, direttore dell' Ospedale Civile di Tolentino. Con 65 figure intercalate nel testo. Roma: Società editrice Dante Alighieri di Albrighi Segati e C. 1903. Pp. 330. Price 7.50 lire.

THERE is no operation on the stomach which is of more importance than gastro-enterostomy. It is now the operation which is preferred in the greater number of the diseases of the stomach which come under a surgeon's treatment and yet it is comparatively new. In 1881 Wölfler started to perform a pylorectomy for a malignant growth of the pylorus, but found that the tumour was so extensive and adherent that it was not possible to remove it. Nicoladoni, who was assisting at the operation, suggested that an anastomosis should be made between the stomach and the small intestine. This was done and the patient recovered from the operation but died four months later from cancerous cachexia. At first only performed for irremoveable growths of the pylorus gastro-enterostomy has now come to be employed for many other conditions, and Dr. Mattòli gives 11 conditions for the relief of which it may be performed. They are malignant disease of the pylorus, cicatricial contraction of the pylorus, narrowing of the pylorus from extrinsic causes, syphilitic or tuberculous disease of the pylorus, congenital pyloric stenosis, gastric ulcer, ulceration or narrowing of the duodenum, hour-glass stomach, gastroptosis, gastric dilatation, and severe dyspepsia. An operation applicable to so many conditions deserves careful study and the author has collected in this volume an account of all the methods which have been employed; he also gives very elaborate statistics of the operation. In all he has collected 1028 cases, of which 819 recovered. Dr. Mattòli has had 17 cases of his own and all of them were successful. The work is very thorough and is by far the best treatise on this valuable operation, though, unfortunately, it is only available to those who can read Italian. We may mention that the printing of the book is excellent.

An Atlas of Illustrations of Clinical Medicine, Surgery, and Pathology. Compiled for the New Sydenham Society (a continuation of the "Atlas of Pathology"). Fusciculus XV. (Double Number), or III. and IV. of the New Series: Xanthelasma and Xanthoma, with special reference to their association with Functional and Organic Diseases of the Liver. Plates A to M and XCII. to XCVII. London: The New Sydenham Society. (Agent, H. K. Lewis.) 1902. Price to non-members 1 guinea.

THE New Sydenham Society has done much useful work. It has issued an excellent Atlas of the Diseases of the Skin and also one on Pathology and a valuable Lexicon of Medical Terms, in addition to a very large number of translations of important foreign works on medicine. It has now commenced a very great undertaking: it intends to issue a large atlas containing illustrations of disease as seen in the living patient and this will, it is hoped, "constitute a guide to diagnosis of great value to the practitioner in all departments of our profession." The double section before us contains illustrations of xanthelasma and xanthoma. The general practitioner may be inclined to ask of what use to him is a series of plates illustrating xanthoma which he is hardly likely ever to see. There may seem at first sight some justification for such a question, but on reflection it will be seen that it is of great importance to be able to recognise xanthoma easily because it is frequently associated with diabetes and it may lead to an examination of the urine when no symptoms point to diabetes. Thus one who could diagnose xanthoma might be able to diagnose diabetes early, while many would fail to detect the diabetes because they had not recognised the xanthoma. We urge all members of the profession to subscribe to this valuable atlas; no one could fail to learn from it, for the eye learns more readily and retains more firmly than the ear. The plates are excellent; 14 of them are in black and white and eight are coloured.

The Chemical Changes and Products resulting from Fermentations. By R. H. ADERS PLIMMER, D.Sc. Lond. London: Longmans, Green, and Co. 1903. Pp. 184. Price 6*s*.

FERMENTATION has afforded a very interesting theme for study and the subject has developed enormously during the past decade. It means now something more than the mere conversion of sugar into alcohol by means of yeast or yeast metabolic products, yet we may be pardoned for pointing out that the name had its origin in the boiling appearance of grape juice during its conversion into wine. Dr. Plimmer has presented us with an admirable essay which though not voluminous conveniently and accurately summarises our present knowledge of the subject and his book is valuable because it brings into review in relatively small scope the upshot of the numerous researches that have now been made. As fresh discoveries come to light our preconceived ideas have of course to be modified. No better instance of this can be cited than the discovery by Buchner of a soluble ferment or enzyme existing in yeast which can set up alcoholic fermentation in saccharine fluids. The change was previously regarded as solely the result of the life of the yeast cell. We should have thought that Dr. Plimmer would have referred more fully to Buchner's work, whereas in point of fact he makes quite slight references to it. Considering how radically Buchner's work is calculated to alter our views as to fermentative change being produced by the living organism and not by the enzyme which it secretes this aspect of the question might have been dealt with much more fully than has been done. This does not, however, detract from the value of the work as expressing the position clearly and concisely at the present time. Dr. Plimmer sums up this position as follows: (1) That the active agent in all cases is a living organism; (2) that this organism sets up either by its own metabolism or by bodies secreted by, or excreted from, it changes in substances of different constitution—e.g., carbohydrates and albumin; (3) that these changes are principally hydrolytic and that some are oxidative and a few are reductive; (4) that the results of these changes are generally simplifications of the original body; and (5) that in certain cases synthesis occurs. At the end of the volume there is an excellent bibliography as well as a complete index of authors.

LIBRARY TABLE.

The Building of the Body. By ALBERT BROADBENT. Manchester: Albert Broadbent. 1903 Pp. 119. Price 2*s*. 6*d*. —This little book, which purports to deal with "the development of health and strength and prevention of disease by wisely selected food," begins with a completely unnecessary marshalling of evidence to prove that the food of a nation is important to the nation. It goes on to give specimen diets, of which three-quarters are vegetarian and all are faddy, and closes with a note of personal experience, a eulogy of

nuts as food, and a string of figures purporting to show the chemical composition and nutritive value of food. Mr. Broadbent, it appears, suffered for ten years from biliousness, "so much eventually that his friends said he had cancer of the stomach." Some months ago, he informs us, he added to a diet "largely makeshift—white bread, potatoes, and a little butter"—a fourth meal "of not more than four or five ounces bread and butter and a simple beverage eaten immediately before retiring." Apparently—we say apparently, for Mr. Broadbent is not a pellucid writer—his symptoms of cancer have abated and the "dandruff which he had has vanished." It would be easy to quote from this book passages to show that Mr. Broadbent has no particular qualifications or knowledge justifying him to aspire to instruct the public on such a topic as the prevention of disease by diet.

The Dentists Register. London: Spottiswoode and Co. 1903. Price 3*s.* 4*d.*—The Dentists Register for 1903 shows that the names of 4617 dentists now appear on the official roll. Of these 2106 hold qualifications from the different corporations—viz., from the Royal College of Surgeons of England (1243), the Royal College of Surgeons in Ireland (421), the Royal College of Surgeons of Edinburgh (274), and the Faculty of Physicians and Surgeons of Glasgow (168); while 2466 practise upon their declaration that they were in *bonâ-fide* practice of dentistry before July 22nd, 1878. The small residue of names are those of dentists practising in right of medical degrees and diplomas and of dentists with colonial or foreign degrees. It will be seen that the number of dentists practising upon diplomas obtained by examination now amounts to over 45 per cent. of the total number of the roll.

Health and Home Nursing. By FLORENCE L. MATHER. London: James Clarke and Co. 1903. Pp. 122. Price 1*s.*—The articles of which this book is composed have appeared in serial form in the *Newcastle Weekly Chronicle*. We can understand that for publication in such form they were very well fitted, and on the whole we think that they are worth re-issue in a volume, for although their information is very elementary and is contained in books already published, still it is put in an extremely clear and readable manner, while the large extent of ground indicated by the title is covered as far as essentials are concerned.

An English Handbook to the Paris Medical School. By A. A. WARDEN, Visiting Physician to the Hertford British Hospital, Paris. London: J. and A. Churchill. 1903. Pp. 74. Price 2*s.*—The design of this little book is to enable the *étranger* to find at once the post-graduate or special medical work that he has come to Paris to pursue, and as it is written on a very comprehensible and orderly plan it should prove very useful. All the more important hospitals of Paris are set out, the names of the medical staffs are given, together with their special subjects, and the hours when they operate or lecture. A daily diary is compiled for the post-graduate student from this information, while information is added about various museums and libraries. Lord Lister and Professor W. W. Keen testify in prefatory letters to their belief that Dr. Warden's little book is wanted and we agree with them. The information is often asked for and it has never been available before.

The Indian Medical Service, Past and Present. By Surgeon-General W. B. BEATSON, M.D. London: Simpkin, Marshall, Hamilton, Kent, and Co. 1903. Pp. 59.—Surgeon-General Beatson, late Deputy-Surgeon-General of the Lahore Division, has republished in book form an interesting article upon his distinguished service which appeared last year in the *Imperial and Asiatic Quarterly Review*. He tells the story of the early ships and chirurgeons of the East India Company and shows the value of the services rendered by Gabriel Broughton, surgeon of the ship *Hopewell*, to his country when he asked as a reward for his medical and diplomatic services at the Moghul Court liberty for the English to trade free of duty with Bengal. Broughton's talents and self-sacrificing zeal must always be regarded as having laid an essential part of the foundation of our Indian Empire. Other famous members of the Indian Medical Service whose exploits are narrated in full are J. Z. Holwell, the historian of the "Black Hole," and Surgeon Fullerton, the survivor of the Taka massacre. Surgeon-General Beatson's pamphlet ends with a comparison of the present and past position of the officers in the Indian Medical Service in which he speaks words of unstinted praise of the service as "the best paid and best pensioned medical service in the empire." We refer our readers to our report of the annual dinner of the Indian Medical Service[1] for obvious evidence that the whole service does not share Surgeon-General Beatson's rosy view.

Le Traitement de la Constipation. Par Dr. FROUSSARD. Paris: J. B. Baillière et Fils. 1903. Pp. 95. Price 1 fr. 50 c.—In this little book the author has summarised modern knowledge of a common symptom in various pathological conditions with considerable shrewdness and neatness; but it is difficult to see how such a subject as constipation can be advantageously considered by a medical man as a separate entity having even the most general rules of treatment, local or hygienic. The public, at whom Dr. Froussard's lessons may be aimed, can learn both from the author and from a preface supplied by Dr. Maurice Soupault that indiscriminate self-drugging with purgatives is useless and dangerous.

The Mother's Guide to the Care of Children in Sickness and Health.—By Dr. LYDIA LENEY. London: C. Arthur Pearson, Limited. 1903. Pp. 253. Price 3*s.* 6*d.*—Dr. Lydia Leney is well qualified by her appointments to write a small book to be of use to mothers who living in rural districts or sparsely populated colonies need a practical guide to which they can refer in cases of illness or accident until medical aid can be obtained. Of course, when a practitioner takes upon herself or himself the responsibility of giving advice to laymen the difficulty must be faced of how much to tell. Now in spite of the simplicity of Dr. Leney's language and the absence of pathological theorising, a considerable amount of medical knowledge is, to our mind, often required to follow her teaching. This may lead to difficulty.

JOURNALS AND MAGAZINES.

International Clinics. A Quarterly of Illustrated Clinical Lectures and specially prepared Articles on Medicine, Neurology, Surgery, Therapeutics, Obstetrics, Pædiatrics, Pathology, Dermatology, Diseases of the Eye, Ear, Nose, and Throat, and other topics of interest to students and practitioners. By leading members of the medical profession throughout the world. Edited by HENRY W. CATTELL, A.M., M.D., Philadelphia, U.S.A. Vol. III., Twelfth Series, 1902, pp. 306; Vol. IV., Twelfth Series, 1903, pp. 312. London: J. B. Lippincott Company. Price 10*s.* 6*d.* per volume.—This interesting quarterly is hardly as well known in this country as it deserves to be. Each year four volumes are published and each volume contains a large number (from 25 to 30) of clinical lectures on important subjects delivered by well-known hospital surgeons, not only of the United States of America but also of many other parts of the world. For instance, in one of the volumes under review there are a lecture on the Treatment of Urticaria by Professor Hallopeau of Paris; one on

[1] THE LANCET, June 20th, 1903, p. 1761.

Surgical Intervention in Gastric Dilatation, by Professor A. Cardarelli of Naples; and one on the Treatment of Face Presentations, by Dr. Robert Jardine of Glasgow. In addition one or two other articles are added; we may specially mention a useful article on the Blood in Health and Disease by Dr. Thomas S. Brown of the Johns Hopkins Medical School; this occupies nearly 100 pages and reviews all the recent work on the changes in the blood in disease. We think that there is no more pleasant way of keeping in touch with the latest developments in medicine than by subscribing to, and reading, this quarterly.

The Cornhill Magazine.—This magazine continues its series of articles upon Prospects in the Professions. In the June number "Medicine" is considered. The writer of this contribution has a thorough grasp of the whole subject and although no name is given it is evident that he must himself be a member of the profession about which he writes. A large amount of useful information is afforded. The actual selection of a school is quite rightly not touched upon, but for the benefit of those who are not acquainted with the internal working of such an institution it is pointed out that a medical school in the present day is a very serious and highly organised academic institution, spending vast sums on its museums, laboratories, and class rooms, and carrying on its work by the help of a large staff of lecturers, demonstrators, tutors, and clerical teachers. The intending student is warned as to what is before him by the words, "The modern student, if he wishes to qualify at all, is one of the hardest worked young men to be found. ..... A modern medical school is no place for an idler, and idlers are sooner or later requested by the authorities to 'move on.'" Very excellent remarks are also made as to the courses which may be pursued when all the examinations have been successfully passed. The young practitioner may embark in general practice, he may enter one of the public services, or he may qualify himself for "consulting work." The pages devoted to this article will well repay perusal. When a young medical man has just become qualified, it is often a very difficult matter for him to decide as to what he shall do next. Unless he can take the advice of a relative or friend well posted in such matters, he may adopt a branch of the profession for which he is entirely unfitted. In the article now under consideration the whole matter is briefly but ably set forth, and it may well be consulted by those who are not sufficiently informed on medical matters to enable them to arrive at a decision as to the course of professional life that they should enter on.

THE ETIOLOGY OF LEPROSY.[1]

AT a meeting of the Bombay Medical and Physical Society held on March 20th a discussion, introduced by Mr. Jonathan Hutchinson, F.R.S., took place on the Etiology of Leprosy.

Mr. HUTCHINSON said he was there as a representative and advocate of a theory that the true explanation of the cause of leprosy would be found in connexion primarily with a fish diet. He cited the circumstance that in South Africa leprosy was a new disease and that there was no leprosy at the Cape till the Dutch farmers brought large numbers of Hottentots to work on their farms. The Hottentots never ate fish and never had leprosy before, but the Dutch were obliged to feed them on large quantities of dried fish. The speaker then proceeded to argue that leprosy was not spread in South Africa by contagion. He was of opinion that the only way in which the living bacillus could be received into the system was by the stomach and that such communication took place when food was eaten which had been contaminated by discharges from a leper's hands. It was known that in India lepers sold sweetmeats and fruits and it could be conceived that children might be tempted to buy such articles contaminated as they might be with the discharges of the sellers. This was a way in which they could account for the occurrence of leprosy in a certain number of lepers in India. His suspicion was that in leprosy they had only a form of tuberculosis. Although he fully admitted that leprosy was communicable by food he was prepared to deny that the disease could maintain itself in any non-fish-eating community. Mr. Hutchinson next took up the question of the transmission of leprosy by heredity and maintained that the transference by inheritance or by touch was quite out of the question. He believed that the spread of the disease in the Middle Ages was due to the influence of the Roman Catholic religion which enjoined fish fasts in Lent. A glance at his "leprosy globe" would show that over the whole world the regional prevalence of leprosy was chiefly on the sea coast, on islands, or in river valleys. The results of his tour in India had satisfied him that the fish theory was now better understood in India than before.

Mr. ARTHUR POWELL said that leprosy belonged to a group of diseases known as the infective granulomata and pathological analogy supported the belief that leprosy was no exception to the laws of its group of diseases, but was an inoculable and contagious disease. He remarked that Mr. Hutchinson admitted that the bacillus of Hansen was the direct cause of leprosy, but wished it to be believed that practically the only way that it was taken into man's system was by the consumption of badly cured fish. He pointed out that numerous attempts had been made to grow the lepra bacillus on media prepared from fish in many ways and all with the same negative result. He said that in South Africa the introduction of the disease was more likely to be due to contact with the Malay fishermen, among whom the disease was prevalent, than to a *de novo* growth of bacilli from eating fish, and he quoted the case of New Caledonia where at the time of his birth leprosy was unknown and the people had always eaten fish. A Chinese leper came there who introduced no variation in the fish-eating habits, but leprosy quickly spread. Mr. Powell was of opinion that Mr. Hutchinson had wholly failed to prove his theory. He was loth that any theory should blind the people of India to three known facts: (1) that leprosy was believed by all competent authorities to be due to a specific bacillus; (2) that the bacillus had never been found anywhere except on the person or in the discharges of a leper; and (3) that no authentic case of leprosy had ever been known to arise where contact with a leper or his discharges was not possible.

Mr. N. N. KATRAK said that judging from the experience of other diseases a bacillus alone was not sufficient to account for the production of this disease. A predisposition of the constitution was also an important factor and it was possible that fish-diet might be one of the causes that predisposed the human body to develop leprosy. He hesitated to accept the view that fish-diet was the only or chief cause. Want of sanitary measures, ignorance, and poverty contributed to the spread and continuance of diseases like leprosy.

Mr. HUTCHINSON, in reply, stated that he could not accept the suggestion of the last speaker that leprosy was due to general poverty or unhygienic conditions. He believed that one of the causes of the disappearance of leprosy from Northern Europe was the greater pains taken in the curing of fish and the better quality of the salt used. In reply to Mr. Powell he said that that gentleman had assumed that the disease was contagious on purely theoretical grounds. He had constructed a family of "infective granulomata," had placed leprosy in it, and thence argued that it must therefore be infectious. This was reasoning in a very vicious circle. Mr. Powell was a contagionist, but he must controvert the facts which seem to show that leprosy was not contagious. The conditions in South Africa were as strong as possible against contagion and in favour of *de novo* —that is, dietetic—origin.

In proposing a vote of thanks to Mr. Hutchinson the Hon. Sir B. KRISHNA said that now that Lord Curzon's Government had reduced the salt duty by eight annas he hoped that pure salt would be used in the curing of fish and thus a source of danger would be removed.

[1] Transactions of the Bombay Medical and Physical Society, vol. viii., No. 2, March, 1903.

THE LANCET.

LONDON: SATURDAY, JUNE 27, 1903.

The Election of Members of Council of the Royal College of Surgeons of England.

THE approaching election of members of the Council of the Royal College of Surgeons of England is hardly of as great interest as many which have preceded it. This is not attributable to the fact that there are only three vacancies, for on many occasions this number has not been exceeded, but the lack of interest attaches rather to the scarcity of candidates, for only four Fellows are applying for election and we do not think that on any occasion within recent years there have been so few candidates.

The vacancies are due to the retirement in rotation of Mr. ALFRED WILLETT, Sir FREDERICK TREVES, Bart., K.C.V.O., C.B., and Mr. HENRY TRENTHAM BUTLIN. Mr. WILLETT has served two full terms of eight years each on the Council of the College, for he was first elected in 1887. He has done good work on the Council since his appointment and now that he has become consulting surgeon to St. Bartholomew's Hospital he is disinclined to apply for a third term of office. The Council at its last meeting accorded him a unanimous vote of thanks for his services. Sir FREDERICK TREVES has had only one term of eight years on the Council, for he was elected in 1895. We are sorry that he is unwilling to serve a second time, for we have no doubt that if he had been a candidate he would have been re-elected. His services to surgery have been many and important and he has contributed largely and usefully to surgical literature. Moreover, the help which he was able to render to HIS MAJESTY the KING at a critical moment and his work in South Africa must not be forgotten. He might have done much good in the College had he remained on the Council and he would doubtlessly within a few years have attained to the presidential chair. We must express our regret that he is unable to continue to carry out the duties of a member of the Council; certainly these are many and great, for in addition to the 11 monthly meetings of the Council itself there are many meetings of committees. We are confident, however, that Sir FREDERICK TREVES would not withdraw from the Council unless he found that he was unable to do the work attached to the office, and we understand that duties in connexion with the new hospital arrangements for the Royal Army Medical Corps occupy so much of his time that he has found it imperative to resign. The third retiring member of the Council, Mr. BUTLIN, is, we are happy to see, applying for re-appointment. Mr. BUTLIN has had only one term of office and his conduct of business during that time gives assurance of his value on the Council. We anticipate that there will be no hindrance to his re-election and, in fact, we expect him to head the poll.

Thus there are practically only two vacant seats and for these there are three candidates; they are in order of seniority, Mr. CLINTON THOMAS DENT, Mr. GEORGE HENRY MAKINS, C.B., and Mr. FREDERICK SAMUEL EVE. Mr. DENT passed the Membership of the College in 1875 and the Fellowship in 1877; he is senior surgeon to the Belgrave Hospital for Children and surgeon to St. George's Hospital. He has done much good work in surgery and we feel that his earnest disposition and keen sense of justice would make him a valuable addition to the Council. His hospital also has not had a new member of Council for very many years. Mr. MAKINS and Mr. EVE differ but little in seniority, for they both passed the Fellowship in 1878. Mr. MAKINS is surgeon to St. Thomas's Hospital and over and above his general reputation is well known for his excellent papers on the Effects of Modern Bullets, based on his experiences in South Africa, where he served during the late war. We consider that he would make an excellent member of the Council. It is true that St. Thomas's Hospital already possesses one representative, but so large and important a hospital and medical school may reasonably have two representatives on the Council. Mr. EVE is surgeon to the London Hospital. As he was formerly pathological curator of the museum of the Royal College of Surgeons of England Mr. EVE'S claims cannot be ignored, though we are inclined to consider that Mr. MAKINS and Mr. DENT should have the suffrages of the Fellows on this occasion. The election will take place on Thursday, July 2nd, at 1.30 P.M., when six Fellows, exclusive of the Council, must be present, and we would suggest that any Fellow who can spare the time should attend, as often great difficulty is experienced in obtaining a quorum. Voting papers have already been sent to all the Fellows in the British Isles and the vast majority vote by post, but the fact that a Fellow has used his voting paper need not preclude his personal attendance. The annual exhibition of additions to the museum of the College is a further inducement to Fellows to be present.

The Metropolitan Hospital Sunday Fund and Sunday Recreation.

IN our supplement published upon June 6th, in which we pleaded the cause of the Hospital Sunday Fund, we appealed to those who might attend at the various places of worship in the metropolis to give liberally and we also expressed the hope that those who for various reasons might not go to church or chapel on Hospital Sunday would not forget to send their contributions instead of taking them. In doing this we seem to have inadvertently used expressions which have given pain to some of those who regard with regret and disapproval the practice indulged in by many dwellers in London, and particularly by those of the younger generation, of going out of town surroundings on Sundays and of indulging in amusements not always compatible with attendance at public worship. The objectors have been few. From the vast majority of those to whom our supplements were sent we have received no intimation of disapproval. This may have been because they appreciated the position from which we dealt with matters that we could not ignore and perhaps it was in part due to the fact that many

ministers of religion contemplate without alarm the new conditions referred to. That anything we wrote should have been misconstrued into advocacy of Sabbath-breaking or into the expression of any opinion upon a topic which was not germane to the subject to which we were anxious to draw the attention of all classes we naturally regret, but at the same time we may point out that our attitude has not been understood by correspondents who have addressed us on the matter and have condemned views which we did not put forward.

In order that the Hospital Sunday Fund should not suffer from the absence of some who might overlook its claims unless specially reminded of them we wrote that he "to whom Sunday is a day of rest from the work of the week may spend it in seeking fresh air and healthy exercise in the country, but he should not be allowed to forget that his aid is asked for those to whom Sunday brings no rest from pain and to whom, owing to their poverty, health can only be restored by the aid of the hospital." To this we added, with the same object in view, "Cycling and golf have made the leisure hours of young men of all classes in the metropolis a good deal healthier and pleasanter than they were when the Hospital Sunday Fund was first instituted in 1873. Motoring takes hundreds of those who can afford to enjoy it, young and old alike, far into the purer atmosphere of the country and into scenes that afford a complete change from those in which their daily lot is cast. Cheap trains cater for those who prefer to travel by rail and the river is thronged with pleasure boats for their benefit. Let anyone who remembers how these things were in the early 'seventies' of the last century, and who takes advantage of the change, be thankful for the opportunities that he now has for healthy amusement on the first day of the week, but let him not forget that the Hospital Sunday Fund depends upon the contributions of all who can afford to give just as it has always done." The statement that certain healthy occupations for their leisure hours practically unknown 30 years ago are now at the command of young men working in London is one beyond contradiction. It is equally a fact that many men, and for that matter women also, avail themselves of these upon Sundays as well as upon Saturdays, bank holidays, and other similar occasions. The result of this seemed to us to be that many who otherwise would contribute to the Hospital Sunday Fund, would probably not be attending public worship or would not do so at places where collections on behalf of the Fund were being held. It could hardly be deemed to be within the province of THE LANCET to comment upon this from the point of view of the minister of religion. We accepted the facts before us and dealt with them by asking that the hospitals should not in the existing circumstances be neglected. Had we done otherwise we should no doubt have been met by the reply, which will suggest itself to many, that those who do not attend a place of worship in the metropolis upon a particular Sunday do not necessarily absent themselves from public worship altogether. The ordinary services are open to them wherever they are and in some places they are expressly invited to attend these; in others special services are held at times likely to attract them and in no case need the desire for purer air and fresh scenes render them oblivious of the voice of religion. Any matter of this kind would, however, have been entirely foreign to our subject and we confined ourselves to urging those who took advantage of the change to remember the hospitals in the altered circumstances to which we called attention, suggesting that they should do so in a thankful spirit, because it seemed to us a matter for congratulation that recreative exercise should be within reach of those who otherwise might be liable to the temptations of unhealthy idleness or of vicious occupations.

To the passage which we have quoted above we added an appeal to those who indulge in what are known as "week-end parties" held in country houses, and in this instance also we stated facts which no one can ignore. We made no comment and we drew no conclusion save the obvious one that persons at a distance from the metropolis do not attend places of worship within its boundaries or in its immediate neighbourhood. In a later passage in our article we pointed out that country churches, as a rule, do not hold collections on behalf of the Metropolitan Hospital Sunday Fund.

In the opinion of one of our correspondents it is "impossible" to read the paragraph which we have quoted above "in any other sense than as an expression of sympathy with those Sunday amusements which are fraught with such mischief to the moral and spiritual health of our land." If this is so, which we do not admit, we must regret having appeared to touch upon a vexed question which we had not, and have not, any intention to discuss. We must only reiterate our sincere hope that all sections of the public will remember the Hospital Sunday Fund if they have not already done so. Such questions as whether cycling, golf, and the other recreations referred to by us are fraught with mischief to the moral and spiritual health of England when indulged in upon Sundays we must leave to the consideration of our readers under other guidance than ours.

Vaccination and Parents' Consent.

AT the county court of Bury, Lancashire, an important and interesting trial[1] recently took place in which Dr. A. E. BRINDLEY, medical officer of health of Bury, was sued by an "anti-vaccinationist" for assault upon his child by vaccinating her, or, to put it more technically, the child, who was five years old, brought the action through her parent as her "next friend." The precise issue raised may not have been tried before, but the facts, though unusual, may at any time occur again and the case illustrates the attitude of the class represented by the "conscientious objector." The child was received in the infectious diseases hospital at Bury on March 5th suffering from scarlet fever and was placed in a ward with 26 other persons, of whom 24 were children, and of these no less than 20 were unvaccinated. There had been for some months an outbreak of small-pox at Bury and on March 22nd one of the children in the ward in question was found to be suffering from the disease. The usual steps were taken; the child affected, who eventually died, was isolated, and the other inmates of the ward, including the child on whose behalf the action

[1] THE LANCET, June 20th, p. 1769.

was brought, were vaccinated. Her vaccination followed the usual course and the fact that it had taken place was discovered by her parents on her discharge from the hospital which took place on April 17th, when the action was started.

At the hearing of the action at the county court the evidence on behalf of the defendant was put before the judge with considerable force and clearness. It was pointed out that to have communicated with the parents of all the children, drawn as they were from a large district, would have caused so much delay that it would have diminished or nullified the protection obtainable from prompt vaccination; that to have allowed the wishes of objecting parents to prevail would have necessitated the isolation of their unvaccinated children or the sending of them home to carry scarlet fever or small-pox, or both, to their neighbours; and that the isolation in order to be complete would necessitate a separate room for each child together with the isolation of those attending upon her. Dr. E. W. HOPE, medical officer of health of Liverpool, added his evidence to that of the defendant. His long experience and ample qualification to speak with authority gave weight to his words when he informed the court that in is opinion Dr. BRINDLEY had only one course open to him in the circumstances, and that was to extend the known protective measures to all the persons in the ward who had been exposed to infection. He believed that the delay of one day, necessary to communicate with the parents, would have involved the lives of several of the children, and in reply to a question from Judge BRADBURY, answered, "I should say there was not one hour to lose. If Dr. BRINDLEY had not taken the steps he did he would have been guilty of negligence." The assent of our readers will be accorded without question to these propositions, but we call attention to them as illustrating the evidence necessary to be given in such cases. A judge and jury have to base their decisions upon evidence, and unimpeachable testimony strictly bearing upon the issues raised, given with as little ambiguity as possible, will always command the attention due to it. In the case at Bury the judge had at an early stage pointed out that although the certificate of conscientious objections obtained by the father in respect of the child exempted him from penalties for not having his child vaccinated it did not in any way forbid the vaccination or render it unlawful. His Honour further pertinently observed that as the child had been vaccinated and was none the worse for it the father's "conscientious belief that vaccination would be prejudicial to the health of the child" would appear to have been without foundation. In deciding in favour of the defendant, he held that although the act of vaccination against the wishes of the parents might be an assault if performed without cause such as existed in the case before him, nevertheless Dr. BRINDLEY had to determine to the best of his judgment what was the proper course to follow, and in doing that he had to take into consideration all the circumstances. The whole case, in short, depended upon whether in the circumstances considered as a whole, it was reasonably right, having regard to the imminent danger, to vaccinate without communicating with the parents or taking any other steps preliminary to action.

It was, of course, beyond dispute throughout that Dr. BRINDLEY had acted with the sole object of protecting to the best of his ability both the child vaccinated and the other children under his charge. He is to be congratulated warmly upon having so far established his position, and any appeal raised upon the question of law will be watched with considerable interest by the medical profession. It may also be suggested that principles are involved in a case of this kind which should affect the actions of physicians and surgeons in many emergencies. A child, for example, may be brought into a hospital suffering from the result of an accident and an operation considered to be necessary may be performed at once. The parents may hold, from religious or other motives, views hostile to all interference with injury or disease. It would be a serious matter, if on the recovery of the child, an action for assault could be brought, not on account of any injury sustained, but on account of a right claimed by the parents to have their permission obtained as a preliminary to anything done on behalf of their offspring. The strict limits of "technical assaults" in cases where medical practitioners cannot quickly get the consent of a person capable of consenting might be laid down by a court of appeal to the advantage and instruction of all, but until this is done the principles enunciated by the county court judge at Bury will appear to reasonable persons to be consistent with justice and good sense.

The Traffic in Diseased Meat.

IT seems to be a law governing procedure in public health administration in this country that before reform can be brought about there must be very serious danger, or even death. It is often to no purpose that a Royal Commission sits for many years, cross-examines experts, visits foreign countries, and finally delivers itself of a report, or series of reports, concluding with recommendations aimed at a better state of affairs. Unless the public conscience is very acutely awakened, and the pressure upon Parliament is such that resistance is obviously undesirable in a political sense, these recommendations are liable to become little better than a series of pious opinions. The second Royal Commission on the Control of Tuberculosis made certain suggestions with regard to the qualifications of meat inspectors. The commissioners, in effect, expressed the opinion that those whose duty it was to protect the public against the consumption of diseased meat might be reasonably expected to possess knowledge superior to that possessed by a plumber, a carpenter, or even a butcher. But recommendations and suggestions notwithstanding, the meat inspection of this country is far from being on a satisfactory footing, and the county borough of Hull has recently afforded an instructive example of the conditions under which the meat traffic of a large city may be carried on.

It appears that certain outbreaks of anthrax occurred in farms in the East Riding of Yorkshire and the cases were not in every instance duly notified to the authorities. Moreover, certain of the carcasses found their way to Hull and were there overlooked by the meat inspectors. Much local excitement was occasioned thereby and a special committee of the corporation was appointed to investigate the matter. Fortunately the

committee included among its members several medical men and in consequence of this the inquiries were of a searching character. As to the meat inspectors, investigation showed that they were not familiar with the pathological appearances of anthrax. But this lack of expert knowledge is probably shared by a very large number of meat inspectors throughout the country and perhaps this aspect of the inquiry was quite sufficiently pressed by the committee. The most interesting and striking fact that the inquiry elicited was that a large number of carcasses of cattle which have died from disease, or been killed because diseased, find their way from the surrounding country into Hull where the numerous distributing centres and private slaughter-houses render a proper control of such carcasses a difficult matter. It seems that these carcasses are not sold in the country districts because the history of the cattle is too well known, and hence there has arisen a race of what are called "carrion butchers" who after dressing the carcass and destroying, if necessary, the offal, consign it to Hull. The understanding seems to be that if the carcass passes the meat inspector the owner receives payment, while if the carcass is seized no opposition is offered and no money is forthcoming. There is a remarkably law-abiding attitude about these "carrion" butchers or dealers and their non-resistant pose is admirably calculated to aid the end which they have in view. In one case the evidence points to the conclusion that a healthy spleen was substituted for that which properly belonged to the carcass. All these devices are doubtless well known and practised in the "carrion" trade; indeed, we once heard of a suspicious-looking funeral procession being stopped at the confines of a large Irish city when the hearse, which was followed by mourners, was found to contain the carcass of a cow which had died, or which, as the phrase goes, "had been killed to save its life."

The Hull meat inspectors have undoubtedly been slack in prosecuting inquiries as to the origin and history of carcasses brought into the city, and reform is obviously called for. But the circumstances revealed at Hull are but part and parcel of the important problem of a better supervision of our foodstuffs, not only in urban but also in rural districts. This importation of diseased meat from rural into urban districts should be dealt with by proper coöperation between the two authorities or better still by some larger authority, such as the county council, which will be able to inform itself of the movements of diseased cattle and of suspicious carcasses. The committee of the Hull corporation has made certain recommendations such as the appointment of a chief meat inspector who shall also be a bacteriologist. This is a sound recommendation, but we trust that in appointing a bacteriologist it will also be seen that he possesses a sound pathological knowledge and is not unmindful of the tricks of the trade. The committee also advises that carcasses of meat intended to be sold to retailers should be taken to a separate depôt for inspection, that all condemned meat should be sent to the destructor instead of to the manure works, and that when an inspector seizes the carcass of an animal which has been affected with any communicable disease he shall notify the superintendent of police of the district from which the animal has come. We must confess that in addition to this excellent advice we should have been glad had the committee seen its way to recommend that an abattoir fitted with all modern appliances and means for refrigeration should be erected in Hull. A town with a quarter of a million inhabitants might well set the example. So long as animals are slaughtered behind a shop or in private slaughterhouses there will be no reform in England such as that which took place in Germany many years ago and we still hope that Hull, instead of adopting a more or less stop-gap policy, will undertake a thorough scheme. Possibly the committee was depressed by the returns which it received from other large towns in most of which there still remains much to be done. But Hull can well afford to lead rather than to follow and the medical men in the corporation should see that the opportunity is not lost.

Annotations.

"Ne quid nimis."

THE BALLACHULISH CASE.

JUDGMENT was delivered in the Court of Session, Edinburgh, on June 19th in an appeal against a decision of Lord Kyllachy, granting the Ballachulish Slate Quarries Company, Limited, interdict against Dr. Lachlan Grant, West Larroch, Ballachulish, from carrying on his practice as representing them in Ballachulish. Dr. Grant was in 1900 appointed medical officer to the employés of the quarry, a certain sum being deducted from the wages of the men each week for fees to the defendant. The Lord Justice Clerk, giving the leading opinion, said: "At first sight this case presents a very narrow aspect but on minute examination of the merits and elements I can only come to one conclusion. The defendant was engaged by the Quarries Company, and by them only, to act as medical adviser to their employés. Being engaged by plaintiffs, who else was to dismiss him, even granting that his salary was made up of weekly deductions from the men's wages? Of course, I quite recognise that had the employés had a voice in the selection of the physician another light would have been thrown on the case, but this was not so, and taking everything as it stands I am of opinion that the decision of the Lord Ordinary was a perfectly correct one and think that it should be upheld." Lord Young said: "I am of opinion that defendant is entitled to *absolvitor* in respect that the plaintiffs in dismissing him signified that they no longer gave him their authority to act as medical man to their employés and that so far as they were concerned he was to act no more after a certain date. On this becoming public the workmen held a meeting which was attended by landed proprietors and other influential persons in the district. At that meeting it was unanimously agreed that defendant ought to be kept on. Plaintiffs, however, paid no attention to this and persisted in their determination to dismiss Dr. Grant. Now who were the best judges of the competency of defendant? Who had the best right to move for the dismissal or retention of the defendant? The workmen whose contributions were going to make up defendant's salary and who, along with their families, were being attended by defendant, or plaintiffs who were acting as agents through whom defendant was engaged? Then one had to take into consideration the number of workmem employed. There were, it was said, over 600 men employed in the quarry and surely the desire of 600 men ought at least to have been heard. On the whole matter I think this interdict ought to be dismissed." Lord

Trayner and Lord Moncrieff concurred with the Lord Justice Clerk and the judgment of the Lord Ordinary was therefore confirmed. So far, therefore, the result in this important contest is adverse to Dr. Grant and the quarriers and in our opinion what has been held by a majority of highly expert lawyers to be a legal right is a moral wrong. No one has ever denied the existence of the agreement, but that does not make the way in which it has been interpreted justifiable in the eyes of those who look beyond the phrasing of a document. It is possible that there may be an appeal to the House of Lords and we hope that if this course is decided upon the necessary funds will be forthcoming. There can be no doubt that Dr. Grant has been treated shamefully in the matter by the directors of the Slate Quarries Company, while the firmness of the men in sticking to his cause is worthy of all commendation.

THE TRAINING OF MIDWIVES.

BY the courtesy of Lady Esther Smith a meeting of the Rural Midwives Association was held on June 15th at 3, Grosvenor-place, London, S.W., the Countess of Ancaster being in the chair. Amongst those present who spoke were Mrs. Hobhouse, Mr. and Mrs. Heywood Johnstone, Dr. Percy Boulton, and Sir Michael Foster. The object of the association is to supply midwives for work in rural districts. It is at the present time training, and is prepared to train, young women who are ready to work in such districts and who will live if necessary in the cottages of the poor and help in the mother's household work. The association is concerned not only in finding the right class of women for such work but also in training them, and it is ready to tell them where their services are required and to send them to such places. As Sir Michael Foster pointed out, there is a great risk of the trained midwife, registered under the new Act, being above her work and expecting more pay than it is in the power of the poor in rural districts to give. As he observed, the minimum requirements of the country midwife are that she must be capable of exercising ordinary care and scrupulous cleanliness, but beyond this she must possess a sufficient amount of training to enable her to recognise when danger threatens either the mother or the child. Such a training cannot be obtained without the expenditure of an amount of money which is far beyond the means of the class of woman who may be expected to take up this kind of work. To help such women is one of the most important functions of the association. Besides this it is prepared to assist by means of grants poor country districts which are anxious to have a midwife. In some instances no doubt help will be forthcoming from the local county councils and with the assistance of subscriptions and the fees from the patients it is hoped that even many of the very poorest rural districts may be supplied with a well-trained and useful nurse. The association has already accomplished some creditable work. It has several cottage midwives being trained, there are some 30 suitable candidates on its books waiting to be trained, and it has arranged with some acknowledged training homes to train them at reduced fees. It has also accepted the responsibility of providing six centres with trained midwives. It is obvious that work of this kind cannot be carried on without considerable expense and it is to be hoped that a sufficient amount of support will be forthcoming to enable the association to carry on the useful work which it has undertaken. Three days later a meeting was held in the same place to consider a scheme for the training of midwives propounded by Miss Gregory, the daughter of the Dean of St. Paul's, who has practised as a midwife for more than seven years among the rural population of Somersetshire, the speakers being the Bishop of Stepney, Sir Edmund Hay Currie, Miss Annie McCall, Dr. C. J. Cullingworth, and Sir Sydney Waterlow. Dean Gregory presided. Miss Gregory's scheme provides:—

That a general hospital with a maternity annexe shall be started in some neighbourhood which is already in need of such an institution—the hospital to be at first built to contain 70 beds, but to be enlarged as occasion requires. That this hospital, in addition to its primary object of nursing the sick poor, shall be recognised as a national training school for midwives; and that here educated women shall receive an 18 months' course of general and monthly nursing, prior to a six months' course of district midwifery—a two years' training in all—after which they shall be drafted out to those districts in other parts of the country which demand their services. That the midwives shall be supervised periodically from the central organisation and shall return every third year for re-examination and instruction in those advances of modern obstetrics which immediately concern their work and which have been made since their time of training. The needs of South London, which have lately been brought before the public with regard to larger sick accommodation, seem to point this out as a suitable locality in which to originate the scheme and at the present moment the claims of Woolwich and Plumstead, with their growing population of 117,000, are under careful consideration. Their proximity to London will render possible the addition to the hospital staff of first-rate physicians and surgeons, while they are of sufficient distance from the large London hospitals to make the journey a grave consideration to sick people seeking admission, which is often of necessity an impossibility.

The new Act of Parliament dealing with midwives will have the effect of abolishing the old order of midwives, which though possessing among its members honest and excellent women, yet comprised women responsible in a large measure for the lamentable infant mortality. We thoroughly sympathise with Miss Gregory's motives, but until the draft rules of the Central Midwives Board have come before the Privy Council it is premature to discuss her scheme. We understand that a conference of experts will be held in the autumn or winter under the auspices of the Princess Christian to consider the best means of carrying out Miss Gregory's scheme.

SEXUAL PRECOCITY.

A DECREE of nullity of marriage was recently sought for before the Divorce Court in which the petitioner was only 13 years of age at the time when her child was born, the father being a boy between 13 and 14 years old. Instances of precocious sexual development and of early menstruation are very numerous and many well-authenticated cases of pregnancy at a much earlier age than the above have been recorded. It is difficult to say what is the earliest period of life at which a girl may become a mother. Many marvellous instances have been related by the older medical writers, but most of them will not bear investigation. Gould in his "Curiosities of Medicine" mentions that the earliest case of impregnation that has come to his knowledge is one reported by von Mandelslo of conception at the age of six years. This case, however, lacks confirmation. A large series of cases can be found in which the girl-mother has been only from eight to nine years of age, while cases in which she has been only very little older than this are too numerous to mention. In the *British Medical Journal* (vol. ii., 1885, p. 913) a very similar case to the above is recorded. The girl, who became pregnant at 12 years and nine months and who was thought to have dropsy of the abdomen, was delivered of a healthy boy, nine pounds in weight, before the arrival of the physician. The father was a boy 14 years of age. The case before the Divorce Court was one of considerable interest because counsel attempted to show that the girl, who was married to the father of her child when about five months pregnant, did not know the meaning of the marriage contract and was unaware of the significance of a wedding ring. With this view the judge found himself unable to agree. The duration of the child-bearing age in the female may vary within very wide limits indeed. A good example of its prolongation has been recently recorded in the *Centralblatt für Gynäkologie*, No. 23, 1903. It is that of a woman, the mother of 16 children, who became pregnant again when between 55 and 56 years old. In the case of the male the law recognises no age limit in the power to beget children and it is impossible to lay down any rule as to what is the earliest age at which a boy can become a father.

The majority of cases of early pregnancy are associated with premature development of the sexual organs and the pelvis, and as a result no doubt of this the labours are often surprisingly easy and rapid, although the size of the child is up to, or even beyond, the average. In eastern countries examples of early pregnancy are common enough and it has been computed that in about 20 per cent. of the marriages in India children are borne by mothers from 12 to 13 years of age. Nor is this to be wondered at when we remember that the age of consent to intercourse has been fixed at the absurdly early limit of ten years.

THE PSYCHOLOGY OF SEERS AND "MEDIUMS."

AT a recent meeting of the Société Médico-Psychologique of Paris, an account of which is published in the *Archives de Neurologie* for June, Dr. Gilbert Ballet, M. Boissier, and Dr. Christian reported a number of observations made by them on spiritualistic "mediums" and seers which have a psychological and medico-legal interest. The subjects of these studies were also presented for the observations of the members present. Dr. Gilbert Ballet and Dr. Monier-Vinard, who is jointly responsible for the paper, in presenting their case, a young man who professed to be a spiritualistic "medium," said that he presented all the characters met with in persons with natural aptitudes towards this class or profession—viz., a hyper-sensitiveness of the special senses with a tendency to the development of hallucinations, especially of sight and hearing. The patient had exhibited at first slight but distinctive symptoms indicating an abnormal facility towards the remarkable phenomenon of "doubling of personality," and this tendency had since become more marked and pronounced. It was a characteristic indication of instability of the "ego" such as was frequently met with in cases of hysteria. His present status recalls, in a psychological sense, the famous visionary Swedenborg, the seer of planets and stars and of life in the planets. The patient is able, add Dr. Ballet and Dr. Monier-Vinard, by his peculiar facility of conjuring up hallucinations, to describe the planet Saturn, its seas and lands, its inhabitants and their language and manners, as though he were actually and instantaneously transported to that planet for the moment. Saturn, says this seer, is comparatively a desert land and the inhabitants of it speak a sort of Greek "stripped" of all polish or beauty. His own body he believes to be capable of undergoing change into a subtle or spiritual essence, when he can "quit his bed and like a smoke or vapour pass into Saturn." Once there his body becomes "materialised" again. His wife's spirit comes to him at times and makes him write automatically (spirit-writing). M. Boissier reported an analogous case of a "medium" with hallucinations of sight (visions) and of hearing. The visions and "voices" which influenced him enabled him to disclose to his clients hidden secrets of the past and future. The medium, however, exhibited eccentricities of conduct and symptoms in ordinary life which showed that he was the subject of a mental infirmity with want of equilibrium. Dr. Christian of Charenton distinguished two categories of "mediums." One class consisted of persons who were fairly rational and fit to live in society and at large. The other class included persons with definite mental alienation, subject to hallucinations of voices and visions and troubled with delusions of persecutory and malign agencies. some of these persons imagined themselves "possessed" by spirits—the devil, Asmodeus, Ashtaroth. Dr. Ballet, in replying to the discussion, said that although various degrees of spirituality, from automatic spirit-writing to the seeing of visions, were present in mediums, the one characteristic common to all was the tendency to "dissociation of personality," and in parallelism with this condition there was manifested an undue facility for the development of visual and auditory hallucinations. In the patient exhibited by him the eventual result of the mental disorder to which he was subject was a condition of dementia with marked loss of intelligence. Such a dementia, however, was not an inevitable outcome of the hallucinatory psychoses, a brilliant example of such a psychosis associated with great intellectua ability throughout life being afforded by Swedenborg.

LAW AND MEDICINE.

IN the lists of those called to the bar by the various inns of court on June 24th appear the names of four members of the medical profession. These are: At the Inner Temple, C. E. Milnes Hey, M.A Cantab., M.R.C.S. Eng., and F. H. Norvill, M.B.Lond., of King's College; at the Middle Temple, E. B. Sherlock, M.B., B.Sc. Lond., D.P.H., Westminster Hospital; and at Gray's Inn, D. L. Thomas, M.R.C.S.Eng., L.R.C.P.Lond., medical officer of health of the Borough of Stepney.

AMYOTROPHIC LATERAL SCLEROSIS; ITS NATURAL HISTORY AND PROGNOSIS AS REGARDS MENTAL LIFE.

AMYOTROPHIC lateral sclerosis is a rare affection among organic diseases of the nervous system. Our knowledge of it dates from Charcot's classical description of it in 1874, but little is as yet known of its natural history and almost nothing of its etiology. In the *American Journal of the Medical Sciences* for June Professor Joseph Collins of New York gives an account of this disease which carries us a step further in knowledge with reference to diagnosis, pathological affinities to other diseases, and prognosis as to mental life, basing his conclusions on ten cases observed at his clinic in the New York City Hospital during the past ten years and on a careful study of 94 cases recorded in medical literature. The following typical and illustrative case is cited by Professor Collins. The patient was a married woman, aged 36 years, whose family history was good with the exception of a taint of tuberculosis. There were no neuroses in her parents. Her illness began early in 1897 with headache and pains in the head and neck and gradually increasing weakness of the upper limbs and of the muscles which support the head. She was readily fatigued after muscular exertion. Later there supervened fibrillary twitching and atrophy of the muscles of the shoulder, neck, and hands. There was general muscular hypertonia and the tendon reflexes were profoundly exaggerated. Spasticity of the lower limbs and slight contracture of the arms and hands developed early in 1899. The Babinski toe-reflex was present. Bulbar symptoms (difficulty of swallowing and paresis of the palate) appeared six months after the onset of her illness. There were no sensory, trophic, or sphincter troubles. The mental state was peculiar. She began to have profound hysterical disturbances in 1899, during the period when the muscular atrophy was making its appearance. Her mood was depressed and despairing. Threats of suicide were constantly being uttered by her. Her reasoning powers were but slightly affected. She died in May, 1899, in a condition of extreme emaciation, the body weight being 48 pounds. The necropsy revealed the following conditions. Apart from the extreme general wasting and atrophy of the upper limb muscles, the lower limb and spinal muscles were small but firm. The brain was normal except for anæmia of the meninges. The spinal cord was of increased firmness and microscopic examination showed a sclerosis of the white substance bordering the whole of the anterior and lateral cornua. The large motor cells were atrophied or present in very small numbers, not more than three or four being seen in a section of a cornu.

Most of the cells had disappeared without leaving any trace of their existence; the remaining cells showed pigmentary degeneration and confluence of the Nissl's bodies into a homogeneous mass. The tracts of degeneration became more superficial as they were traced downwards through the dorsal and into the lumbar segments of the cord. The pathological changes are summarised as comprising, first, a uniform disappearance of the motor cells in the spinal cord and especially in the cervical and lumbar enlargements; secondly, a degeneration of a zone of nerve fibres in the antero-lateral region skirting the cornua in the cervical region; thirdly, a proliferation of neuroglia in the degenerate areas of white matter and within the anterior cornua, the proliferation being denser in the cervical than in the lumbar region; fourthly, atrophy of the anterior spinal nerve roots; and, fifthly, relative integrity of the crossed and direct pyramidal tracts in the cord. The lesion is apparently a primary atrophy of the anterior cornual cells comparable to progressive muscular atrophy, with the addition that commissural fibres passing longitudinally as well as transversely in the spinal cord from segment to segment are also affected, thus producing the tract or zone of degeneration referred to above. The pyramidal tracts are affected late in the course of the disease and only to a slight extent. This view of the pathogenesis of amyotrophic lateral sclerosis suffices, adds Professor Collins, to harmonise the various observations of Charcot, Leyden, Déjerine, Gowers, and Dana. The cerebral cortex is not affected except very late when there occur symptoms of dementia, such as depression of spirits, meaningless laughter and weeping, and suicidal impulses. All of these symptoms were present in the above case. "The point to be emphasised," adds Professor Collins, "is that mental symptoms occur with considerable frequency in this disease and rarely in progressive muscular atrophy." The etiology of amyotrophic lateral sclerosis still remains obscure. A study of the 104 cases—viz., 94 typical cases collected from medical literature and 10 personally observed—gives the sexes in the proportion of 55 males to 49 females. 30 patients were between 30 and 40 years of age, 29 between 40 and 50 years, and 28 were between 50 and 60 years. The average duration of the disease was slightly over two years, the majority of cases running a course of from one to five years. Probably we must look to pathological chemistry, concludes Professor Collins, for the discovery of the real morbific agency.

STREET COLLECTIONS.

THE amiable ladies and enterprising hospital secretaries whose enthusiasm in the cause of charity takes the direction of rattling, or of instigating others to rattle, money-boxes in the street are probably not aware that the proceeding brings them within the letter of the Vagrancy Act, 1824, and renders them liable to a penalty calculated to have a distinctly discouraging effect upon their zeal. By Section 3 of the Act it is provided that "every person wandering abroad or placing himself or herself in any public place, street, highway, court, or passage to beg or gather alms, or causing or procuring or encouraging any child or children so to do, shall be deemed an idle and disorderly person within the true intent and meaning of this Act." The punishment regarded by our legislators as appropriate to the offence is imprisonment with hard labour for not more than one month. It is, however, not practicable to deal with the matter quite in this spirit and although the passer-by may have resented being badgered by a ragged youth whose *bona fides* could not be regarded as sufficiently established by the printed label on the box thrust in his face, it has hitherto been the lesser evil to abstain from reprisals. In order to supply a more satisfactory means of protecting the public Mr. Akers-Douglas has introduced a Bill to regulate street-begging for charitable purposes. This end is to be achieved by extending the powers given under Section 11 of the Metropolitan Streets Act, 1867, to the Commissioner of Police or to the Commissioner of City Police acting with the consent of the court of mayor and aldermen. With the approval of "one of His Majesty's principal Secretaries of State" either of these authorities will be enabled to make regulations "to be observed by all persons within the general limits" of the Act of 1867 "with respect to the places where, and the conditions under which, persons may collect money in any street for charitable or other purposes." The "general limits" here referred to comprise the region included in a circle of four miles' radius the centre of which is at Charing Cross. The Bill is no doubt aimed mainly at the demonstrations by the unemployed which have been something of a nuisance this year, but it will serve to check also the abuse of charity which is too frequently committed, professedly in the name of certain hospitals.

THE RELATION OF CHRONIC ENGLARGEMENT OF THE SPLEEN TO ANÆMIA IN INFANCY.

THE *Boston Medical and Surgical Journal* of May 28th contains an important article on the Relation of Chronic Enlargement of the Spleen to Anæmia in Infancy by Dr. John L. Morse. The blood of infants under the age of two years differs from that of adults. The amount of hæmoglobin, though high for a short time after birth, is low afterwards. The number of leucocytes per cubic millimetre is greater than in adults, averaging from 10,000 to 14,000. The percentages of the various forms are as follows: small mononuclears, from 50 to 70; large mononuclears, from 5 to 15; polynuclear neutrophiles, from 30 to 40; and eosinophiles, from 1 to 10. Thus the proportion of mononuclears is about thrice that of adults and of polynuclears only about one-half. All pathological changes in the blood are exaggerated in infancy. Dr. Morse gives notes of 22 cases of chronic enlargement of the spleen in infancy in which complete examinations of the blood were made. Rickets was present in all but two cases. The splenic enlargement and blood changes were considerable in two of the three cases in which the rachitic changes were most marked, but were no greater than in other cases in which the latter were slight. Gastro-intestinal disorders were present in every case in which data were obtained. Syphilis was present in two cases. In six cases the liver was enlarged. In general the largest livers were associated with the largest spleens, but in three cases in which the spleen reached the anterior superior spine the liver was not enlarged. There was general enlargement of the lymphatic glands in every case in which their condition was noted. The greatest enlargement was found in cases in which the spleen was much enlarged, but the glands were only slightly enlarged in three out of the four cases of the largest spleens. The number of erythrocytes bore no constant relation to the size of the spleen. In the two cases in which the number was lowest the splenic enlargement was slight; the highest number (5,800,000) occurred in a case in which the spleen reached to the umbilicus. In five cases there were over 5,000,000 per cubic millimetre and in five others there were over 4,000,000. There was no evident relation between the number of erythrocytes and the size of the liver. The diminution in the amount of hæmoglobin was always relatively greater than that in the number of the corpuscles. However, the hæmoglobin is always relatively low in infancy and a relatively great diminution of its amount is characteristic of the anæmias of that period. There was no leucocytosis in eight cases and four of these were among those in which the spleen was largest. The greatest leucocytosis occurred in a case in which the spleen reached to the umbilicus but in another case in which the spleen reached to the umbilicus there were only 8200

leucocytes. Thus there was no constant relation between the number of leucocytes and the size of the spleen. Similarly there was no constant relation between the size of the lymphatic glands and the number of leucocytes. Dr. Morse concludes that when anæmia, splenic tumour, and enlargement of the liver or lymphatic glands are found associated in infancy they are in no way dependent on each other but the results of a common cause—disturbed nutrition; that the anæmia is secondary; and that there is no justification for placing the cases of anæmia in infancy associated with enlargement of the spleen or liver in a separate class and calling them "splenic anæmia of infancy." Of the 22 cases seven were known to be fatal. In one case death resulted from meningitis. In the six other cases there were no complications; in all of these the blood changes were marked; the spleens were very large in three but comparatively small in the others. Nucleated red corpuscles and megaloblasts were numerous in five and two cases respectively which terminated in recovery, hence these forms of cell are not of so much prognostic importance in infancy as in later life. The prognosis depends more on the condition of the blood than on the size of the spleen. The largest spleen may return to the normal size in a few months.

THE DIAGNOSTIC VALUE AND SIGNIFICANCE OF BABINSKI'S GREAT-TOE REFLEX.

MUCH excellent and valuable work has been done during the past three years in regard to the important sign known as Babinski's great-toe reflex, the frequency of its occurrence, and its diagnostic value in the differentiation of organic and functional nervous affections. Three years ago a leading article on this subject was published in THE LANCET[1] based on the work of Babinski and Collier. Dr. G. Marinesco has published in the *Archives de Neurologie* for June a full summary of his observations on 191 persons—viz., 130 cases of organic disease of the central nervous system, 45 normal adults, and 16 newly born infants—the observations being made carefully and repeatedly in each case so as to obtain trustworthy results. In 100 cases of organic hemiplegia of cerebral origin the Babinski reflex was seen 86 times. 31 cases of paraplegia resulting from various causes were also examined. They included 15 cases of Pott's disease of the spine, four each of traumatism of the spinal cord and syphilitic myelitis, two each of pellagra with and without tabes dorsalis, two of sarcoma of the spinal meninges, and one each of amyotrophic lateral sclerosis and cancer of the vertebral column. Babinski's sign was absent in three of the four traumatic cases and in the one case of cancer of the vertebral column but was present in the remaining 28 out of the 31 cases of paraplegia. In 45 normal individuals the Babinski reflex was altogether absent. Among 16 newly born children it was observed only in a single case. It is the rule, however, adds Dr. Marinesco, if the infant is asleep, to elicit, by plantar stimulation, extension of the toes and especially of the great toe. Hence the diagnostic value of Babinski's reflex in infants lies only in the fact that it is (or is not) obtainable when the child is awake. In progressive compression of the spinal cord the tendon reflexes and ankle clonus are apt to disappear while the Babinski reflex still persists. Dr. Marinesco also adds the interesting observation that in recent hemiplegia the Babinski reflex makes its appearance very shortly after the hemiplegic "stroke," whereas the exaggeration of the knee-jerk, which is due to descending degeneration of the pyramidal tracts, makes its appearance somewhat later. Under chloroform narcosis a Babinski reflex already existent disappears, whereas an exaggerated knee-jerk or an ankle clonus co-existent with the Babinski reflex before anæsthesia still persists when the anæsthesia is complete. The Babinski reflex is thus a sign of greater delicacy and value for purposes of differential diagnosis than are the other symptoms mentioned. Occasionally anomalous reactions of the great toe were met with in chloroform narcosis. The collected observations of Dr. Marinesco lead him to the conclusion that the Babinski reflex is dependent upon a disturbance of function of the pyramidal tracts short of, and not necessarily equivalent to, actual descending degeneration of those tracts.

[1] THE LANCET, Sept. 9th, 1899, p. 727.

THE DISTRIBUTION OF PLAGUE.

As regards Cape Colony the acting medical officer of health states that for the week ending May 30th the condition of the various places mentioned below was as follows:—At the quarantine station, Saldanha Bay, 2 Asiatic males remained under treatment in the hospital, both being convalescent. At Port Elizabeth 5 cases of plague were discovered during the week—namely, 1 European male and 1 coloured female on May 24th, 1 coloured male on the 26th, 1 Indian male (found dead) on the 28th, and 1 native male on the 30th. At the Plague Hospital 1 coloured female and 1 native male were discharged recovered during the week, leaving 12 cases under treatment. Plague-infected rats continued to be found in the town. At East London 2 cases of plague were discovered during the week—namely, 1 native male on May 24th and 1 native male (found dead) on the 26th. At the Plague Hospital 6 cases remained under treatment. At King William's Town 5 cases of plague were discovered during the week—namely, 2 European males and one European female on May 24th, 1 native male (found dead near Berlin) on the 29th, and 1 European male on the 30th. At the Plague Hospital 1 Indian male was discharged recovered, leaving 9 cases under treatment. Plague-infected rats continued to be found in the town. Neither at Graaff-Reinet nor at Burghersdorp were there any cases of plague or of plague-infected rats, but the latter continued to be found on the railway premises at Queenstown. As regards Hong-Kong a telegram from Sir Henry A. Blake received at the Colonial Office on June 17th announces 120 cases of plague, 12 of the sufferers being Europeans. 78 deaths occurred from plague during the week ending June 13th. As regards the Mauritius a telegram from the Governor received at the Colonial Office on June 19th states that for the week ending June 18th there were 2 fatal cases of plague.

THE LIMITATIONS OF THE PUBLIC HEALTH ACTS.

IN a leading article in THE LANCET of June 20th, p. 1751, we dealt with a case illustrating the difficulties which sanitary authorities have to contend with in the performance of their duties. Two further instances have just occurred which serve to strengthen the demand for more ample legal powers. The first is supplied by the result of the appeal in the case of the Consett Urban District Council *v.* Crawford. In this case a number of members of the council and their officers, while making a tour of inspection of their district, were some of them locked in, and others of them locked out of, a yard by the person whose premises they were examining with a view of learning whether a certain nuisance had been discontinued. Proceedings were therefore taken against the obstructor under Section 306 of the Public Health Act, 1875, but without success and the Court of Appeal upheld the refusal of the magistrates to convict on the ground that the representatives of the council were trespassers. The second case involves a somewhat different point. At the Worship-street court the Finsbury borough council summoned a person named Maley for not having cleansed a house let in lodgings in accordance with the by-law relating to such matters. The

house was registered under Section 94 of the Public Health (London) Act, 1891, which enacts that "every sanitary authority shall make and enforce such by-laws as are requisite for," among other things, "the cleansing and lime-washing at stated times of the premises," and under this section by-laws in the form approved by the Local Government Board had been made requiring such cleansing to be done in the month of April. Mr. Mead, however, held that the by-law was unreasonable and therefore bad and invalid and he dismissed the summons with costs. His attitude appears to have been determined by the consideration that there are many houses of the class here referred to in Finsbury and that there might consequently be difficulty in getting workmen to carry out the necessary operations. If there be sufficient foundation for this opinion the responsibility lies upon the Local Government Board which may perhaps be persuaded to change its wooden "model" by-law for one with effective machinery.

CANCER OF THE RECTUM AS A COMPLICATION OF PREGNANCY.

THE *Scottish Medical and Surgical Journal* for June contains an important paper by Dr. A. W. Russell on the rare condition of pregnancy complicated by cancer of the rectum. Only about 20 cases appear to have been recorded. Probably the reason of the infrequency is that the period of liability to cancer is later than that of child-bearing. Dr. Russell relates the following case. A woman, aged 27 years, was in her sixth pregnancy. In the second month she complained of slight hæmorrhage and pain on defecation. A "constricting band" was felt in the rectum about two and a half inches from the anus. Two and a half months later the pain and hæmorrhage had increased, the rectum was narrower, and the motions were ribbon-like. A month later Dr. Russell saw her for the first time in consultation. Under anæsthesia a dense mass was felt surrounding the rectum for more than two inches from the anus and so encroaching on the lumen that only a finger could be passed with difficulty. As the chances of the pregnancy reaching the time for Cæsarean section were very small there was little reason to consider the prognosis of operation with regard to the child. Mr. R. H. Parry agreed to perform abdominal hysterectomy with a view to relieve pelvic congestion, to avoid further risks, and to inspect the pelvis so as to decide as to the possibility of removing the diseased rectum. The cervix was found to be fully dilated and the membranes to be bulging, showing the imminence of abortion. The posterior vaginal wall was so invaded that the least tension would have torn the cancerous mass. After draining off the liquor amnii Mr. Parry opened the abdomen and removed the uterus. As the broad ligaments and other pelvic structures were invaded he did not attempt to remove the growth but performed left inguinal colotomy. Good recovery followed and within a fortnight the pain was so diminished that the customary dose of morphia was discontinued. From a study of the recorded cases Dr. Russell draws the following conclusions. 1. If cancer of the rectum is discovered early in pregnancy immediate radical operation should be considered. 2. In advanced pregnancy with a small circumscribed growth the uterus should be emptied before attempting removal of the growth. 3. In advanced pregnancy with a viable child Cæsarean section and hysterectomy should be performed and, if possible, inguinal colotomy should follow and the diseased rectum should be detached from above so as to allow the operation to be easily completed by the vagina according to the method of Rehn or Liermann. 4. When, on the other hand, the disease is beyond radical treatment the child should be saved by Cæsarean section or hysterectomy with or without colotomy as may be necessary. 5. If the child is dead and the cancer is beyond operation Cæsarean section is still likely to be needed unless labour can be accomplished easily and without undue crushing or laceration by the aid of perforation, embryotomy, or version. 6. With modern improvements in methods of operation better results may be expected than those of allowing labour to take place or inducing it through the natural passages.

CHYLOUS ASCITES.

THE very existence of chylous ascites—that is, the presence of chyle in the peritoneal cavity—has been called in question, but there can be no doubt that the condition, though rare, does exist. Guinochet made some observations on a case in which the ascitic fluid apparently contained chyle. The composition of the fluid was determined by analysis when the patient was on ordinary diet, and then the diet was altered to milk with butter beaten up with it. The fluid was again examined and an increase in the amount of fat was observed, and, moreover, butyrine was found to be present, and as butyrine is not a constituent of normal human fat it may be taken that the fat in the ascitic fluid in this case was derived from a lacteal. Chylous ascites appears to occur from blocking of the thoracic duct, though it has been found after trauma of this vessel. The duct is blocked in two ways; most commonly it is compressed by a malignant growth of the stomach or pancreas, or posterior mediastinum, but a few cases have been recorded in which the obstruction has been at the opening of the thoracic duct at the junction of the left subclavian and internal jugular veins. The abdominal lymphatics become distended and one or more give way, allowing the chyle to escape into the abdominal cavity. As might be expected, when the point of obstruction is high up chyle has also been found in the left pleural cavity, because the left half of the thorax drains into the thoracic duct, while the right half is drained by the right thoracic tract. In the diagnosis of chylous ascites one possible error has to be guarded against. Ascitic fluid may be milky in appearance and yet there may be no admixture of chyle, for a breaking-down carcinoma of the peritoneum may make the fluid milky. Still, as abdominal carcinoma is the commonest cause of true chylous ascites, a microscopic and chemical examination is necessary before the diagnosis can be considered certain. In THE LANCET of June 20th, p. 1740, we published an account of a case of this rare condition which was under the care of Mr. A. H. Burgess of Manchester.

URINARY CHANGES AFTER INJURIES TO THE HEAD.

IN an interesting communication to the *Monatsschrift für Unfallheilkunde und Invalidenwesen*, 1902, Heft 12, Dr. Borchard discusses the occurrence of glycosuria, albuminuria, and cylindruria after severe injuries to the head. He investigated the condition of the urine in a number of cases as soon as possible after the injury and found noteworthy changes in two of them which he records. The first case was that of a young labourer, aged 17 years, who fell from the second storey of a building and sustained a fracture of the base of the skull. One and a half hours after the injury the urine was found to contain 1·2 per cent. of albumin, 1·5 per cent. of sugar, numerous red blood corpuscles, and casts. These conditions gradually disappeared and the patient recovered completely, and on testing him for alimentary glycosuria a year later a negative result was obtained. The second case was that of a young man, aged 20 years, who sustained a fracture of the base of his skull from a falling scaffold pole. On his arrival in an unconscious condition at hospital six hours after the injury, his urine contained traces of albumin, 1⅓ per cent. of sugar, but no

blood or casts, though granular casts appeared shortly after. The patient died 27½ hours after the injury and at the necropsy no changes in the medulla oblongata were found either on macroscopic or microscopic examination, but there were two small areas of softening in the apex of the temporal lobe and a few small hæmorrhages in the cortex. There was slight cloudiness of the cortical and medullary substance of the kidney. Dr. Borchard further gives a summary of the literature of the subject. According to Higgins and Ogden glycosuria occurs in 9·43 per cent. of injuries to the head and is usually complicated by albuminuria. This condition gradually gets less marked and eventually completely disappears in most cases. An alimentary glycosuria or a true diabetes may follow the injury to the head in a certain number of cases and may persist in a few of them, while the occurrence of diabetes insipidus after such injuries is well known. Dr. Borchard attributes the urinary changes to disturbances induced in the circulatory apparatus of the kidney by the cerebral injury, but states that an actual lesion in the region of the fourth ventricle is not an essential in their production.

THE next competition for the Howard Medal of the Royal Statistical Society (1903-04) will take place in the ensuing session. The essays must be sent in on or before June 30th, 1904. In addition to the medal a grant of £20 will be awarded to the writer who may be the successful competitor. The subject is—"The Effect, as shown by Statistics, of British Statutory Regulations directed to the Improvement of the Hygienic Conditions of Industrial Occupations." Any necessary explanations may be obtained at the office of the society, 9, Adelphi-terrace, Strand, London, W.C., by application to the secretary of the society, Mr. Benedict W. Ginsburg.

THE Pathological Society of London will meet at Oxford in the Pathological Laboratory, South Parks-road, on Saturday, July 4th, from 4 to 6 P.M. There is a train from Paddington to Oxford at 1.45 P.M. Dinner will be provided at 6.45 at Magdalen College. Members who propose to dine are requested to give notice to the Regius Professor of Medicine, Oxford, before July 1st. The price of the dinner tickets, including wine, is 7*s.* 6*d.* The return train to London leaves at 9.20 P.M. Communications will be made by Dr. Beddard, Dr. Pembrey, Dr. Spriggs, Dr. Dreyer (Copenhagen), Dr. Haldane, Dr. Ritchie, and Dr. Muir.

THE governors and medical staff of Guy's Hospital are sending out invitations for a garden party to be held at the hospital on Friday, July 3rd, at 3 P.M. The laboratories and museums, the College, the Henriette Raphael Nurses' Home, and the wards will be open until 5.30 P.M. The Wills' Library will be declared open by Sir Frederick Wills, M.P., who will also distribute the medals and prizes gained by the successful students of the year. The guests are invited to join with the governors, the members of the staff, and the students in assuming academic costume.

A *matinée* in aid of the building fund of the Queen Alexandra Sanatorium, Davos, was given on June 22nd, at His Majesty's Theatre, London, by permission of Mr. Beerbohm Tree. The theatre was very crowded. Many distinguished people generously paid enormously enhanced prices for seats and the entertainment, which was well received, resulted in the realisation of the large sum of over £5000, which must be highly gratifying to all concerned.

THE Congress of the Royal Institute of Public Health will be held at Liverpool from July 15th to 21st inclusive, under the Presidency of the Right Hon. the Earl of Derby. The business of the Congress is divided into seven sections and the honorary general secretary is Dr. E. W. Hope, Municipal Offices, Liverpool, to whom all inquiries should be addressed.

AT a meeting of the Obstetrical Society of London to be held at 20, Hanover-square, W., on Wednesday, July 1st, a discussion on Ophthalmia Neonatorum will be opened by Mr. Sydney Stephenson, introduced by Dr. W. S. A. Griffith. The honorary secretaries will be glad to hear from any who, not being Fellows of the society, desire to take part in the discussion.

WE regret to record the death of Miss Isobel S. Bryson, M.B., assistant medical officer of Camberwell Infirmary, who died at Camberwell from acute blood poisoning following upon a wound made during a post-mortem examination. Miss Bryson graduated in medicine at the University of London in 1900.

THE first honorary degrees granted by the University of London were conferred on Wednesday last—"Presentation Day"—by Lord Rosebery, as Chancellor, upon the Prince of Wales, the Princess of Wales, Lord Kelvin, and Lord Lister.

A CONVERSAZIONE will be held at King's College, Strand, London, W.C., on Wednesday, July 1st, from 9 to 11.30 P.M., preceded by a distribution of prizes at 8 P.M. by Sir William Anson, M.P., Warden of All Souls, Oxford.

THE Duke of Fife, the Lord-Lieutenant of the county of London, accompanied by Her Royal Highness Princess Louise, Duchess of Fife, will open the Epileptic Colony at Ewell on Wednesday next, July 1st.

THE annual prize-giving at the London School of Medicine for Women will take place on Friday, July 3rd. The Hon. Sir John A. Cockburn, M.D. Lond., K.C.M.G., will present the prizes.

AT the annual meeting of the Röntgen Society to be held at 20, Hanover-square, on Thursday next, Lord Blythswood will be proposed as President.

THE MALARIAL SEASON OF 1902 IN ITALY.

THE fourth volume of the Transactions of the Society for the Study of Malaria[1] has just been issued. It consists of a series of 39 papers by different members of the society, most of which take the form of reports of epidemics in various parts of Italy or of experimental work undertaken by the society along the lines of railway. One article by Dr. Schoo gives an account of malaria in Holland in 1902. Four of the papers are devoted more particularly to mosquitoes or their larvæ, one to an account of a search after hæmolysin and globulin in malarial blood, and two to the question of the absorption and elimination of quinine. A review by Professor Celli of the work done in regard especially to the epidemiology and prophylaxis of malaria concludes the volume which is further furnished with 13 maps of different malarious towns and districts described in the reports.

At the meeting of the society held on June 4th Professor Celli, by whom the report was presented, gave the following brief summary of the results obtained by the various workers during the past season.

1. *The epidemiology of malaria.*—The malarial season of 1902 was, on the whole, even milder than that of the preceding year, but there were not wanting, as in 1901, several

[1] Atti della Società per gli Studi della Malaria, vol. iv., Roma, 1903.

as yet unexplainable exceptions to the general mildness of the epidemics. Taken as a whole, however, the epidemiological researches of the past year confirmed in many respects previous observations in reference to the geographical distribution of the various malarial parasites, to the different epidemic types in the various parts of Italy, and to the course of the several epidemics of benign tertian, malignant tertian, and quartan fever respectively. They also emphasised many doubts which still required to be cleared up. For example, despite all their efforts they still lacked a sure and ready means of diagnosing latent malaria so as to differentiate clearly primary infections from relapses. And there also remained to be more thoroughly elucidated the subject of relapse itself—that fundamental characteristic of malarial fevers—in connexion with the causes which favoured it, to which, besides those already recognised—namely, overfatigue and rheumatic influences—must now be added deficiency of nourishment on account of which the patient was unable to throw off the disease, and certain morbific agencies such as inoculation by tubercle which might light up afresh a latent malarial fever. It appeared, too, that true epidemics of relapses might develop anywhere during the fever season, giving a benign character to the epidemic in years of mild malaria. In its turn the pre-epidemic recrudescence of relapses was always very evident in benign tertian and quartan, but it was not wanting even in malignant tertian although sometimes, as in Latium, it preceded by only a short interval, or, indeed, almost accompanied, the commencement of the epidemic, perhaps because then also began the season most favourable to the development of the corresponding hæmosporidia in the stomach of the mosquito and also because the period of incubation of that fever was the shortest. The combination of relapses with primary infections gave the different well-known epidemic types as they were met with between the north of Europe and the south of Italy, each type receiving its character chiefly from the predominance of some particular species of parasite. In Italy, however, the course of each of the three epidemics of benign tertian, malignant tertian, and quartan was substantially the same in the different parts of the country. It was also necessary that paludism and the occurrence of the anopheles should be studied more closely and that their relations should be determined with the presence, the disappearance, the spontaneous diminution, the intermittency, and the recrudescence of malaria—in short, with all its autochthonous variations. These were so many biological problems bearing upon epidemiology which still awaited solution. Further, the mutual relations between agriculture and malaria had been investigated during 1902. For example, it was noticed that the connexion between ricefields and malaria was not always and everywhere the same, for whilst the opening of new ricefields was always accompanied by a great extension and increased intensity of malaria the cultivation of the rice, on the other hand, did not interfere with the diminution or even with the disappearance of the epidemic, just as it never interfered with its periodical annual oscillations. Likewise it had now been definitely ascertained that the maceration of hemp and of flax was inimical to the life of the larvæ of anopheles. Finally, it was necessary to define still more clearly the relations between meteorology and malaria, especially between the temperature and the development of the various hæmosporidia in the stomach of the mosquito and between the temperature and the course of the several epidemics of mild tertian, malignant tertian, and quartan respectively. Meanwhile it might be affirmed that these relations could neither be identical nor uniform for the three parasitic species and for the three corresponding epidemics of malaria. In conclusion, there were several epidemiological problems (not, however, affecting the new etiological theory of malaria) upon the solution of which the experience of the past year had thrown no light and which must remain for future investigation.

2. *The prophylaxis of malaria.*—Upon this subject the results obtained were more decisive and more harmonious than those which had been elicited in regard to the epidemiology. First of all, it had been proved experimentally that the absorption of quinine introduced by the mouth in the form of tablets such as those supplied by the Italian Government was effected quite as rapidly and efficaciously as happened when the drug was administered in the form of powder or in solution. It was further demonstrated that the daily exhibition of small doses (from 25 to 50 centigrammes) had the effect of causing an accumulation of the alkaloid in the blood, at the same time obviating rather than producing the phenomena of cinchonism. Again, the clinical observations of all the members who studied the question coincided with experimental results in confirming the therapeutic efficacy of quinine in tablets and in throwing into relief the marvellous power of quinine as an antidote and the absence of any inconvenience attending its administration even when continued for months in generous doses. There was perhaps no other example in pharmacology of an antidote so perfect—that is to say, of one the action of which was so rapidly established and could be so long continued as that of quinine. In addition to this its administration could be interrupted, whenever desired, without any disturbance, whilst the curative effects of larger doses did not suffer any diminution on account of the system being habituated to the smaller ones. This mithridatic property, however, was fully displayed only when the quinine was administered daily or at most at intervals not greater than three days. Intolerance of the drug was limited to a few individuals. The contributors to the report were unanimous in affirming that there was no better specific against malarial infection, whether preventive or curative, than quinine. Arsenic and iron had no direct curative action in malaria; they might, indeed, have an indirect effect, but whether they were really successful as an adjunct to quinine in preventing relapses could not yet be definitely stated, whereas it was very certain that good nourishment was more effectual than arsenic and iron in the radical cure of latent malaria and in warding off, as far as was possible, the occurrence of relapses. To succeed in this last aim the secret was to give quinine with the utmost assiduity and to continue to give it for a long time after the febrile attacks had been cut short. And if, in spite of the treatment by quinine skilfully administered and if sometimes after intervals of perfect health there should be a return of fever, they must still have recourse to quinine as the most trustworthy remedy. Owing to the resistance of the relapses to quinine it was found, as might be expected, that no notable diminution of the epidemic of malaria followed its use, even in large doses, for the pre-epidemic curative treatment of patients who were actually malarious or about to become so. Fortunately, its prophylactic action was much more ready and efficacious. In doses of two grammes (30 grains) per week for an adult (one half the quantity for children) administered by the continuous or daily method (from 20 to 40 centigrammes per day), or even by the interrupted or weekly method (one gramme per day on Saturday and Sunday), they would certainly succeed in reducing to a minimum the new cases—i.e., those with primary infection—and also in diminishing greatly the number of relapses which were prone to continue to recur with such obstinacy. Of a total of 3055 persons thus prophylactically treated in 1902 only 235, or 7·7 per cent., were affected with primary fevers or with relapses. With a mixed prophylactic treatment by means of quinine, arsenic, and iron, the effects were less successful than with quinine alone, the percentage of attacked under this method being from 14 to 20, whilst with arsenic and iron alone the results were absolutely negative. Thus in any anti-malarial campaign there was only one remedy which they could not do without and that was quinine. It was high time that every medical man in Italy understood this and learned to appreciate the value of the very powerful weapon for combating malaria which was put into his hands by the law for the gratuitous supply of quinine for the benefit of all the working people in malarious localities. The physician should therefore understand thoroughly how to make use of this truly sovereign remedy and accordingly now that the law placed completely at his disposal a supply of quinine for the poor he should leave off the old method of treating the febrile attacks only with a few doses barely sufficient to cut them short and should adopt instead the following rules: (*a*) When other prophylactic measures could not be counted upon it was necessary to give a *preventive* course of quinine to the healthy as well as to those who might have a latent infection. The distribution of quinine on a large scale by the day or by the week was easily effected when saccharated tablets were employed. The cost was trifling—namely, from two to three lire (1*s.* 8*d.* to 2*s.* 6*d.*) a head for a whole season of four months. The quantity of quinine required per head for the whole preventive campaign was less than was often required for cutting short definitely a fever once contracted. (*b*) In the case of those very few individuals who, in spite of

the preventive treatment, contracted fever it was necessary to cut short the attacks with therapeutic doses and to continue these large doses for a long time (from two to four weeks) before recommencing the preventive treatment as before. (*c*) In the case of those patients who, in spite of the preventive treatment, continued obstinately to get relapses the administration of therapeutic doses (from half a gramme to one gramme) must be prolonged for a long time (from four to six weeks), and so soon as it seemed desirable the tonic remedies arsenic and iron should be added. Thus, from one year to another the sad inheritance of the infected would continue to diminish and with perseverance they might succeed in greatly reducing, and in time in almost wholly annulling, the tribute which the rural population was paying to malaria. It was for medical men to attempt this on a large scale, beginning with a part of the population. The beneficial effects which would accrue would prove the best stimulus for the future to the rest of the population in teaching and persuading them by the eloquence of facts how under the guidance of the medical profession and with the help of their own efforts they could, without expense and with almost no inconvenience, easily preserve their health during the months when, and in the places where, formerly people sickened and died from malaria. For those who were not obliged to work in the open air during the most dangerous hours (dawn, sunset, and night) and who possessed a house or shelter to protect them from the attacks of the pestilent mosquitoes, there was also the system of mechanical prophylaxis, which both in Holland and in Italy continued during 1902 to yield the most brilliant results. It would suffice to quote a few statistics to demonstrate this. The railway company which in 1901 applied the system over 573 kilometres of the most pestiferous parts of their lines, benefiting 4138 persons, extended it in 1902 to about 750 kilometres to the benefit of 5600 persons, among whom in consequence malaria, instead of being the rule as formerly, had now become the exception. The Direction-General of Customs which in 1901 as an experiment protected 20 barracks of its officials against mosquitoes in 1902 protected similarly 72 barracks. The results had been so good that both the administration of the railways and that of the customs had still further extended this system of prophylaxis. For various reasons, however, it was little suited for the circumstances of the peasants, for whom the prophylaxis by quinine was best adapted, but this did not alter the fact that wherever there was a house or shelter which could be protected against the entrance of mosquitoes there malaria ceased to be a domestic epidemic. In fact, amongst a total of 5851 persons to whom they could point as having enjoyed in 1902 the great privilege of this mechanical prophylaxis, there occurred in all only 2·8 per cent. of new or primary infections and only 10·1 per cent. of relapses. The method of prophylaxis by the destruction of the mosquito could not yet succeed in the battle with nature, which provided so prodigally for the reproduction of that insect; it could therefore have nothing more than a local and very limited application. A study had also been made of the place which the new theory of malaria took in relation to the great works for the improvement of the land according to the various systems carried out in different parts of Italy. It was ascertained that every drainage system exercised a distinctly deterrent effect upon mosquito life over the improved area, but the deficiency or neglect of small complementary drainage operations and the want of proper care of the drainage canals often neutralised the effects of the best of these systems. Fortunately even when the drainage itself did not succeed in wholly extirpating the anopheles it was always the first step towards the hygienic improvement of an extensive territory, the second step being the cultivation of the ground without which the expense and labour of drainage were all thrown away.

With the prophylactic measures above mentioned at their disposal they were now in a position to protect both the labourers engaged on the drainage works and the agricultural colonies on the improved areas. To this end the special sanitary legislation against malaria should serve admirably. After the first law of Dec. 23rd, 1900, for the State control of quinine, there was enacted another on Nov. 2nd, 1901, by which quinine might be supplied by the district surgeon gratuitously and plentifully to all labourers and peasants in malarious places at the expense of their employers; and all labourers who depended directly or indirectly upon the State were granted the right of having their habitations protected against malaria at Government expense. All the observations made by their associates in 1902 served to show upon what a solid scientific and experimental basis the laws against malaria had been founded. They might therefore congratulate themselves that, all obstacles having been finally overcome and the malarious zones in many communes of the kingdom having already been marked off, these two beneficent laws will begin during the approaching fever season to render those inestimable benefits which had always been observed to follow them wherever in experimental and mission stations they had been able to apply them. It was now their duty to see that those laws, which had issued through the efforts of the Society for the Study of Malaria, were properly applied. Meanwhile, with the object of educating the people upon the question, 4000 copies of a pamphlet explaining and making known the anti-malarial legislation had been distributed among the peasants, whilst another pamphlet containing the laws and regulations against malaria was being distributed to medical men.

After having thus briefly reviewed the work of the society during 1902 in presenting the fourth volume of its studies with its 39 original memoirs richly illustrated Professor Celli concluded his relation with a simple statement of fact—viz., that the whole of that important work was represented in the balance sheet by the small sum of 11,384 lire (£455).

THE ROYAL SOCIETY'S (SECOND) CONVERSAZIONE.

THE second conversazione of the Royal Society was held on June 19th, when, as is usual, ladies graced the occasion, while to some extent the exhibits shown at the first meeting, which was held on May 15th, were repeated. Thus, Sir William Crookes once more demonstrated the properties of the emanations of radium, Dr. W. J. Russell his photographs of dust deposits, Professor F. T. Trouton, F.R.S., his hydrometer and viscosimeter, Sir Oliver Lodge his new coherer, and so forth.

There were, however, some additional exhibits of considerable interest. Mr. Henry Crookes, for example, showed plate cultures of several kinds of bacteria which had been exposed to radium emanations through a mica screen. The results proved the bactericidal effect of the "electrons" from radium. In every case it was found that the organisms were killed in those places where they had been exposed to the action of only ten milligrammes of bromide of radium. On incubation a bare space which was free from bacterial growth was left on the plate opposite the point where the radium had been placed. The organisms so exposed were the bacillus liquifaciens, the bacillus coli communis, and the bacillus prodigiosus. Dr. W. Ramsden showed some very pretty experiments bearing upon the behaviour of surface membranes, bubbles, and emulsions. The experiments shown were intended to illustrate a theory that the persistence of bubbles and emulsions is due mainly to the separation of solid or highly viscous matter at the surfaces concerned. A magnetised needle floating freely on the surface of plain water takes up a north and south position and is at once deflected by another magnet. A similar needle if floated on the surface of a very weak solution of saponine stays in any position and is not deflected by a magnet. That this is due to surface tension only is shown by the fact that if the needle be immersed in the saponine solution it sets north and south and is easily deflected. Moreover, if the needle be floated on saponine solution and the vessel containing it be suspended by a fine piece of gut, so that it be free to move on approaching a magnet the whole system, needle, vessel, and contained fluid twist as if one homogeneous magnetic solid. A bubble of oil if "blown" in saponine solution by means of a current of more saponine solution remains as a spherical bubble. If the saponine solution inside the bubble be withdrawn the oil film slowly contracts, exactly like a soap bubble or an india-rubber film stretched by water and also the film takes the shape of a drop of water, only upside down. Mr. John W. Warman exhibited a model representing the hydraulic organ of the ancients. This instrument was originally invented by Archimedes and the feature of its construction is that the wind pressure is derived from

the weight of an annular mass of water instead of from a heavy weight placed on the folded air-bellows as in the case of the modern "pneumatic" organ. A new instrument known as a "turbidimeter" for determining the turbidity of water was shown in accordance with the ingenious design of Mr. C. Anthony. The instrument consists of two parallel tubes, one containing the water to be examined and the other a Nichol prism. The eye-piece contains another Nichol prism. By rotating the eye-piece the illumination of the one field can be varied until it matches the field receiving the light through the standard thickness of water under examination. This apparatus, it seems to us, should be very valuable in the examination of public water-supplies. Professor E. Rutherford and Mr. F. Soddy showed that the radio-active emanations of radium and thorium can be condensed by means of liquid air, volatilisation taking place, however, as soon as the temperature rises. Their actual quantity is infinitesimally small; they are invisible and unweighable but their presence can be detected by the property of radio-activity. Professor J. Sollas, F.R.S., showed an ingenious method for determining the specific gravity of blood, using only a single drop for the purpose. A fluid heavier and another lighter than blood are introduced through a tube, the heavier first, so that the lighter fluid added subsequently floats upon it. Both fluids consist of a mixture of chloroform and benzine; the specific gravity of the heavier fluid is 1·07 and that of the lighter is 1·04. The two fluids mix by diffusion, a column being obtained in which the specific gravity varies continuously. A drop of blood obtained from a pin prick is then added and this sinks in the column till it reaches a level where the specific gravity is identical with its own. By means of glass floats the specific gravity of the drop of blood may be indicated. An interesting illustration of the way in which gun accidents may arise was given by Mr. J. Y. Buchanan, who showed in the first place the effect which was produced by the momentary relief of great pressure upon spheres at great depths under the sea, pointing out that the collapse of the brass tube in the peculiar circumstances of one experiment is the exact counterpart of a mistake unintentionally made by people out shooting, especially in winter. If the muzzle of the gun becomes stopped with a plug of even the lightest snow the gun invariably bursts. Light as the plug of snow is, it requires a definite time for a finite pressure, however great, to expel it. During this short time the tension of the gases liberated from the powder is so great that the barrel is unable to withstand it and bursts. The Cooper-Hewitt mercury vapour lamp attracted very general interest. The light derived from the electric discharges through mercury vapour is entirely devoid of red rays and the eye sustains little fatigue under this form of illumination. Mr. J. Mackenzie Davidson showed a new stereoscopic fluoroscope which beautifully portrays objects in relief in the path of the x rays.

In the meeting room lantern demonstrations were given by Professor E. D. Poulton, F.R.S., and by the Bioscope Company.

MEDICINE AND THE LAW.

Parents and Medical Aid.

THERE are two more or less well-known religious sects in England the members of which profess not to consider it right to obtain medical aid or to apply anything in the nature of scientific remedies when they are ill, and from time to time cases occur in which death and the question of certification call attention to tenets which, to ordinary persons, appear to be extremely foolish as well as dangerous to human life. No adult can be compelled by law to avail himself of the services of a physician or surgeon and consequently it is only when children die that the question arises whether those having the custody of them should be punished. A number of cases have been tried during the past 50 years in which members of the sect known as the Peculiar People have been charged with manslaughter and other offences according to the facts provable against them, with various results. At one time an Act of Parliament (31 & 32 Vict., Cap. 122, Sec. 37) made it an offence punishable on summary conviction to neglect to provide adequate medical aid for a child whereby his health should be, or should be likely to be, seriously injured and it was held that in a case where death ensued upon such neglect a conviction for manslaughter might take place. The section in question has for some time been repealed and in its place the Prevention of Cruelty to Children Act of 1894 makes it a misdemeanour for any person who has the custody, charge, or care of any child wilfully to neglect such child in a manner likely to cause such child injury to his health, and in a case argued before the Court for the consideration of Crown Cases Reserved the wilful omission to provide medical aid for a child has been held to be neglect within the meaning of this Act, so that on death occurring through such omission the parent or other responsible person may be charged with manslaughter. Persons so charged have sometimes been convicted and sometimes have been acquitted. It is not easy to obtain a conviction, which must to a large extent rest upon medical evidence. A medical witness in such a case has usually not seen the deceased during the progress of the illness or at any time before death, and unless he is prepared to state positively that the neglect to provide medical aid shortened the life of the deceased there is no evidence of manslaughter. Even if a conviction for this serious offence takes place a very light penalty is imposed owing to a natural desire of the judge to be lenient towards misguided persons acting under the influence of honestly held religious beliefs. Punishments thus inflicted have no deterrent effect. The same parents have been known to let child after child die in similar circumstances of neglect and even though the deaths may not be numerous, because the Peculiar People are few, still the fact remains that these preventable deaths take place, while other children suffer unnecessary pain, and to these, if they do not die, no attention as a rule is called. At the present moment there are parents awaiting trial who, according to the evidence laid before the magistrate, did not call in a medical man when their child to their knowledge was suffering from diphtheria. No comment can of course be made on this particular case, in which the charge is not one of manslaughter but of neglect so as to cause unnecessary suffering. The question, however, may well be ventilated apart from any particular instance whether some special means ought not to be provided by law for the compulsory rescue of the sick children of parents whose religious views are opposed to medical interference. Such rescue or removal need not last beyond the child's restoration to health and would be in accordance with the principle that prevention is better than the punitive measures which fail to provide a remedy. It is not at all certain that parents holding views of the nature indicated would regard it as a hardship or as a martyrdom even of the mildest kind that medical aid should be applied to their children by others under the authority of the law. The Peculiar People hold that they would commit sin by acting voluntarily as if they doubted the passage in the Bible responsible for their conduct (St. James v. 14). It has never, however, been shown that their tenets go beyond this or that they would dream of resisting acts which would be done by others without implicating them and without any connivance on their part. Two sects have been mentioned above; the second, known as Christian Scientists, is of a different character. The Peculiar People, founded in 1838 by two men named Bridges and Banyard, have never increased to any considerable extent and are drawn from the humbler classes in London and its neighbourhood, especially in Kent and Essex. The Christian Scientists, whose non-employment of medical aid is apparently based upon denial of the existence of anything so material as disease and death, are of more recent origin, occupy quite a different social position, and are said to be numerous not only in London but also in the provinces. The Christian Scientist, however, does not seem hitherto to have ventured to test the efficacy of the Prevention of Cruelty to Children Act by allowing his children to die without medical aid or else no instance of his doing so has attracted attention in this country. Possibly his faith is of a less established character than that of the Peculiar People or he may think that a judge would not be inclined to treat an educated man as he would a fanatic with less opportunity for the development of his intelligence. In the United States of America, however, the deaths of the children of Christian Scientists without medical aid being sought are not unknown and they may occur at any time in our own country. The matter is not an easy one to deal with as there would be no certainty that the illness of a child among the Peculiar People or Christian Scientists would ever be heard of. Probably,

however, neighbours would be ready to give information if to do so was of any practical utility. At present little can be done except in certain cases where removal is necessary for the purpose of isolation. It must be borne in mind that the sects named do not exhaust the numbers of those who, for religious reasons, disapprove of scientific interference and similar sects may be brought into being. Moreover, it is not easy to see why religious motive on the part of our fellow citizens should excuse our practically acquiescing in the pain and death of their children. We should not, presumably, allow members of fanatical sects to flagellate their children, or to starve them, or to make them perform dangerous acts as tests of their childish faith in accordance with the precepts of a religion devised by some one emulous of the success, financial and otherwise, of Mrs. Eddy. If, however, the religious motive prevents us from inflicting a deterrent punishment when the law is broken we might supply ourselves with means for preventing as far as possible the suffering and death of helpless children.

Bogus Degrees.

The libel action Garnett *v.* Clarke tried in the King's Bench Division on June 15th and 16th, in which the bogus degrees conferred by "Harriman University," of Tennessee, U.S.A., formed the subject of inquiry, is of considerable interest to the medical profession. It not infrequently happens that a quack summoned under the Medical Act for the use of titles implying registration endeavours to treat the matter as if the offence were a merely technical one and although he cannot allege that he ever possessed qualifications recognised as such in Great Britain, instructs his counsel to urge on his behalf, in mitigation of an inevitable penalty, that he is a graduate of a university abroad holding highly sounding degrees and to be regarded as a person trained to practise medicine, but excluded by professional jealousy from doing so in this country. The University of Harriman appears to exist to some extent as an educational centre—that is to say, there was evidence that some part of the buildings are in use, though dirty and ill-kept, as a school for boys and girls. Moreover, of 26 professors included in the list of its instructors five were actually traceable as existing, one of whom at the time of inquiry occupied the chair of "domestic science" when not putting principle into practice as housekeeper to an oil agent who, with his wife, lived in a portion of the university buildings. The university also possesses a chancellor, for he made a personal offer to confer upon Mr. Garnett, the plaintiff in the libel action, the degree of S.T.D., in addition to that of D.D., apparently without extra charge. The letters S.T.D. were explained by Mr. Garnett in the witness-box as standing for *Sacra Theologia Doctoris*, and the erudition of members of the university was further attested by a letter of the obliging chancellor, who wrote: "I have so arranged your name as to cause my books to show that your degree has been earned and it will come *pro merito* and not *pro honoris*." The examination for the degrees thus earned by Mr. Garnett took place at Ocean Grove and at Philadelphia and he admitted that he had never been to Harriman in his life, although he demurred to the suggestion that he had not been within 1000 miles of it. The article, moreover, in the *Christian World* which formed the subject of the libel action, disclosed that a recipient of a Harriman B.A. degree had been examined in the house of Mr. Garnett in London and that the papers had been forwarded sealed to Harriman, or at all events to the United States, to be looked over. Mr. Garnett himself seems to have taken the degrees of B.A., M.A., B.D., and D.D., and really at the price a man less easily contented might have had a few more without laying himself open to the charge of extravagance, for matriculation at Harriman costs 10 dollars, the examination such as Mr. Garnett successfully underwent is charged at 30 dollars, and degrees can be had at 10 dollars apiece. No evidence that medical degrees have been conferred at Harriman was given, but the university does not confine itself to theology, for besides the professor of domestic science already mentioned a professor of astronomy was spoken of who, in non-professional moments, practises as a dentist and legal instruction was described as occupying one week in the year. In any case Harriman University does not stand alone. It is merely a striking example of institutions not confined to the United States which exist, but do not flourish, for the dissemination of bogus titles to the deception of the ignorant and unwary. The *Christian World* is to be congratulated upon the full and public exposure which it has brought about.

New Milk Deficient in Fat.

The Divisional Court in a recent case upheld the conviction of a milk-seller, under the Sale of Food and Drugs Act, 1875, for selling (on being asked for new milk by the inspector) a liquid which had been taken directly from the cow and had not been tampered with or adulterated, but which in consequence of the length of time which had elapsed since the cow had last been milked, was deficient in fat to an extent of 30 per cent., the remainder of the fat having been absorbed by the cow during the unduly long interval between the milkings, the offence being that the article was not of the quality demanded of him.

Adulteration.—Sale by a Limited Company.—Previous Knowledge of Purchaser as to Adulteration.

The Divisional Court in a recent case decided (1) that a limited company is a "person" within the meaning of Section 6 of the Sale of Food and Drugs Act, 1875, and therefore could be convicted; and (2) that a sale may be to the prejudice of the purchaser although the purchaser had previous knowledge, not derived from information given by the seller, that the article sold was not of the nature, substance, and quality demanded by him. The test is: Whether the sale would have been to the prejudice of a purchaser who had not that special knowledge.

Accident Insurance.—Was Death caused by Accident or Intervening Cause?

Mr. Justice Wright recently heard the case of Mardorf *v.* Accident Insurance Co., in which the assured person had taken out an accident insurance policy with the condition that it should not apply to "death" caused by, or arising wholly or in part from, any "intervening cause." The assured on July 2nd accidentally inflicted a wound on his leg with his thumb-nail. His leg became inflamed and on July 9th erysipelas had set in. This was followed on July 12th by septicæmia and on July 16th by septic pneumonia, from which complaint he died on July 22nd. It was conceded by the insurance company that the septic germs, the development of which resulted in the man's death, were introduced into his body at the time of the infliction of the wound. Mr. Justice Wright held that the erysipelas, septicæmia, and septic pneumonia were not "intervening causes" within the meaning of the policy but merely different stages in the development of the septic condition which was immediately brought about by the introduction of the poison and that the man's death was directly and solely caused by the accidental injury to his leg.

Vinegar of Squills.—Acetic Acid.—Standard of Quality.—Analyst's Certificate.

In the recent appeal case of Hudson *v.* Bridge the Divisional Court held that the court of summary jurisdiction was wrong in deciding that there was a standard for the quantity of acetic acid which should be present in vinegar of squills. The court was also of opinion that the analyst's certificate should have reported that the article in question was liable to decomposition and as the certificate did not do so it was void under the schedule to the Sale of Food and Drugs Act, 1875, which provides that: "In the case of the certificate regarding milk, butter, *or any article liable to decomposition*, the analyst shall specially report whether any change had taken place in the constitution of the article that would interfere with analysis."

The Power of an Inspector to procure Samples of Milk outside his own District.

The Divisional Court in the recent case of McNair *v.* Cave decided, with some reluctance, that the power conferred upon inspectors under Section 3 of the Sale of Food and Drugs Act Amendment Act, 1879, to procure at the "place of delivery" a sample of milk in course of delivery to the purchaser in pursuance of a contract of sale cannot be exercised by an inspector outside the district for which he is appointed. For instance, an inspector for the city of Westminster cannot intercept at St. Pancras milk intended ultimately for a dairyman carrying on business at Westminster.

When is a Home for Epileptics a "Hospital"?

The Divisional Court in the recent case of Ormskirk Union *v.* Chorlton Union decided that an institution having for its object the care and treatment of persons suffering from epilepsy, which was partially supported by endowments and

partially by donations and payments made on behalf of the patient, is a hospital within the meaning of Section 1 of the Poor Removal Act, 1846. One of the judges remarked: "In my opinion a hospital is none the less a hospital because some patients may make payments. It would be placing a great burden upon parishes in which institutions such as these are situated if the residence of patients in them were to have the effect of making the parish liable to support them."

Admixture of Arsenic in Beer.—Analyst's Certificate.—Sufficiency of Particulars.

The Divisional Court in the case of Goulder *v.* Rook decided that a certificate of a public analyst which merely states that a sample of beer submitted to him for analysis "contains a serious quantity of arsenic" is insufficient. The certificate should be more explicit and should contain exact details sufficient to enable the magistrate to come to a conclusion.

The Liability of a Surgeon for Lack of Skill and Care.

In the case of Lanphier *v.* Phipos, which was an action against a surgeon for "carelessness, negligence, and unskilfulness," it was said in the judgment: "Every person who enters into a learned profession undertakes to bring to the exercise of it a reasonable degree of skill and care; he does not, if he is an attorney, undertake to gain a cause in all events; nor does a surgeon undertake that he will perform a cure; nor does the latter undertake to use the highest possible degree of skill, as there may be persons of higher education and greater advantages than himself; but he does undertake to bring a fair, reasonable, and competent degree of skill; and in an action against him by a patient the question for the jury is whether the injury complained of must be referred to the want of a proper degree of skill and care in the defendant or not." And in the leading case of Rich *v.* Pierpont it was laid down that to render a medical man liable for negligence or want of due care or skill it is not enough that there has been a less degree of skill than some other medical man might have shown, or a less degree of care than even he himself might have bestowed; nor is it enough that the practitioner himself admitted some degree of want of care; there must be proof that there has been a want of competent and ordinary care and skill, and to such a degree as to have led to a bad result.

Conclusiveness of Certificate of Medical Referee: Workmen's Compensation Act, 1897.

The Court of Session in the case of M'Avan *v.* Boase Spinning Company held that the certificate given by a medical referee under Schedule I. of the Act (stating that a workman who was in receipt of weekly payments under the Act had recovered from the injuries in respect of which the payments were made, and that although he was suffering from partial disability for work such disability was not connected with the injuries, but was "the result of deficient natural vigour of constitution, together with advancing years"), *was conclusive* against any further claim by the workman for compensation under the Act.

ASYLUM REPORTS.

Cumberland and Westmorland Asylum (Annual Report for 1902).—The average number of patients resident during the year was 677, comprising 344 males and 333 females. The admissions during the year amounted to 190—viz., 88 males and 102 females. Of these 142 were first admissions. Dr. W. F. Farquharson, the medical superintendent, states in his report that the number of admissions was considerably above the average of recent years and had only twice been exceeded in the history of the asylum. Of the 190 patients admitted 176 were chargeable to the rates and 14 were private patients. "The admissions include four cases of congenital imbecility, five cases of epilepsy, two cases of general paralysis, 18 patients over 70 years of age, and five cases transferred from other asylums; the great majority of the cases just enumerated were incurable, and the remainder of the admissions included an unusually large proportion of unfavourable cases." In 28 cases the attack of insanity had lasted more than a year before the patient was taken to the asylum. Nearly two-thirds of the patients were admitted in weak health, seven were in a very exhausted and feeble state, and several died shortly after admission. 57 of the patients who were admitted had suicidal tendencies and 21 had actually attempted suicide. A great variety of causes of insanity was assigned for the cases admitted. Conditions affecting the bodily health were responsible for the onset of insanity much more frequently than were mental shocks or business worries. By far the most important of the causes was hereditary predisposition to insanity, which was ascertained in 32 per cent. of the cases, though it probably existed, adds Dr. Farquharson, in a much larger proportion. In 11·5 per of cent. cases alcoholic intemperance was the exciting cause of insanity as compared with 17·7 per cent. of cases in 1901 and 20·3 per cent. in 1900. "It is pleasing to be able to record," adds Dr. Farquharson, "a diminution in the number of cases due to a preventable cause such as alcoholism. It is to be hoped that the new Licensing Act will have a decided influence in reducing drunkenness, and if it has that effect the community will in time reap the benefit in a diminished amount of insanity and crime." The number of patients discharged as recovered during the year amounted to 70, or 10·3 per cent. of the average number resident. The deaths during the year amounted to 61, or 9 per cent. as calculated on the same basis. Of the deaths three were due to pneumonia, four to general paralysis of the insane, four to pulmonary tuberculosis, seven each to organic brain disease and senile decay, eight to epilepsy, 13 to cardiac disease, and the rest to other causes. A post-mortem examination was made on every patient who died. The general health of the inmates was good and there was an absence of epidemic or zymotic disease during the year. The Commissioners in Lunacy state in their report that the patients were neatly dressed, that the wards were comfortable and the building in good order, that the food of the patients was satisfactory and evidently relished by them, and that the medical case-books were very satisfactorily kept. The committee of management states in its report that the weekly charge of maintenance was 9*s.* 4*d.* per patient and that extensions to the building are proposed to be made at a cost of £37,000.

Leicester Borough Asylum (Annual Report for 1902).—The average number of patients resident during the year was 791, comprising 326 males and 465 females. The admissions during the year amounted to 197—viz., 72 males and 125 females. Of these 164 were first admissions. Dr. J. E. Montague Finch, the medical superintendent, states in his report that of the 740 patients remaining in the asylum at the end of the year 1902 13 men and 15 women were deemed curable. An unusually large number of patients have been actively suicidal during the year and several determined attempts at self-destruction were made. The principal causes of insanity in the admissions were heredity in 34 cases, alcoholic intemperance in 17 cases, domestic trouble and adverse circumstances in 14 cases, and recurrence of a previous attack in 20 cases. The number of patients discharged as recovered during the year amounted to 68, comprising 29 males and 39 females, or 8·6 per cent. of the average number resident. The deaths during the year amounted to 75—viz., 31 males and 44 females, or 9·4 per cent. as calculated on the same basis. Of the deaths three were due to cerebral hæmorrhage, three to pneumonia, five to cerebral softening, seven to cardiac disease, eight to pulmonary tuberculosis, nine to senile decay, 10 to influenza, 16 to general paralysis of the insane, and the rest to other causes. "The death-rate in 1902," adds Dr. Finch, "was somewhat higher than in the previous year, partly in consequence of an outbreak of epidemic influenza from which ten female patients died, and also owing to the very unfavourable state of the bodily health of many of the admissions, no fewer than six patients having died in less than a week after admission. ..... Most of these patients had to be carried in when bought here and never left their beds. The number of bedridden and aged patients continue to increase." A considerable number of improvements and alterations have been effected during the year in regard to facilities for escape in case of fire and with reference to increase of water-supply in case of emergency. The Commissioners in Lunacy state in their report that the general condition of the asylum was excellent, that the wards were bright and plentifully supplied with objects of interest, that the dormitories and bedding were in a thoroughly satisfactory condition, that the patients were neatly clad and orderly in behaviour, and that the medical case-books were well kept. The committee of management states in its report that since the date of the previous report extensions and additions

have been carried out in the laundry and administrative buildings without exceeding the estimates. "Previous to the disastrous fire at Colney Hatch Asylum there was found to be some danger in the old part of the asylum. ..... This has been remedied and fire-proof doors between the blocks [and wards] are being added. An additional emergency staircase on the female side has also been constructed." The committee has had under consideration the question of a pension scheme for all officers and servants of the asylum and this scheme when adopted by the committee will shortly be submitted to the Leicester borough council for its approval.

ANKYLOSTOMIASIS AMONG MINERS.

AT the Fourteenth International Congress of Miners, which met recently at Brussels, an interesting discussion was held on the spread of Ankylostoma Duodenale among Coal Miners. There were 75 delegates attending this congress representing five different nationalities and 1,271,500 miners. Such a representative gathering should exercise considerable influence, particularly when the demands made are such as meet the claims of humanity and the interests of the community at large. On this occasion the question of the prevention of ankylostomiasis was introduced by the German delegates. They pointed out that the disease had spread far and wide before its particular character was discovered. The patients were treated as suffering from anæmia and some years elapsed before it was ascertained that the symptoms were caused by the presence of a parasite in the intestines. The newspapers representing the interests of the German miners published many articles on the increase of sickness among the men who worked in the coal-pits. They protested that the sanitary measures prescribed by the members of the medical profession and even those decreed by the law were not applied. It was only after some years of such propaganda that the German Government was at last induced to institute an official inquiry and then it was discovered that in the coal-fields of Ruhr alone there were more than 25,000 miners affected. In four mines particularly affected every miner was carefully examined and there it was found that 90 per cent. had eggs of the worm. The disease seems to have been gaining ground in Germany ever since 1896 and the German delegates maintained that according to the official figures the average vitality of the German miners had been reduced from 45 to 40 years. They explained that their figures were absolutely trustworthy, for the system of obligatory and universal insurance inforced throughout the German Empire rendered it necessary for the State to keep and to publish elaborate statistics. Nevertheless no explanation was given as to what these figures meant. Was it that the average duration of life among the mining population had been reduced from 45 to 40 years, or that the adult male miner, having survived the perils of childhood, was now only able on an average to work for 40 years? whereas before the year 1896 this average was estimated at 45 years. In any case it is obvious that considerable harm has been done. Extractum filicis maris was the only remedy that had proved efficacious, but the cure was as bad as the disease, for it produced great prostration and sometimes blindness ensued.

The Belgian delegates confirmed what the Germans had said. In the Liège coal-fields a case of ankylostomiasis had been reported in 1883 and a death was attributed to this cause in 1884, but nothing was done, no precautionary measures were taken, till the year 1896. The provincial authorities then appointed a medical committee to inquire into the matter and in certain mines it was discovered that the eggs of the worm were present in the fæces of from 70 to 80 per cent. of the miners. This does not mean that they were all ill, for the egg does not always develop into the larva, and it is only when the worm, a thread-like worm, exists in large numbers that the health of the patient is seriously affected. But it seems impossible to deal with the eggs, for they maintain their vitality even when treated with concentrated sulphuric acid. The disease is a local disease. For instance, on the plain of Herve only one case of infection was found as the result of 1600 analyses. But in one other mine in this same district from 60 to 70 per cent. of the miners were infected.

The British delegates were not able to throw any light on the subject, though Mr. Abraham, M.P., did remark that this complaint had occurred among the miners of Cornwall and that the British Government had taken some precautionary measures to prevent the disease from spreading to the coal mines of the country. As to the nature of such precautions there was a common agreement as to what they should be. It seemed generally admitted that this worm was introduced in various coal mines by some Italian labourers who had been engaged on the St. Gothard tunnel works, where the disease was very prevalent. The dejections were the chief source of contamination. The first and most essential precaution was the introduction of portable sanitary pails in all mines and the adoption of rigorous measures to insure that these pails should be used on every occasion. Where the mine was already infected the miners must be careful not to drink any running water but only such water as was brought down from the surface and known to be clean. Before eating the miners should wash their hands and avoid as much as possible touching their mouths with their fingers whilst at work. Also, so as not to take coal-dust, mud, and earth home from the mines, it was suggested that baths should be provided at the pit's brow and that the miner should wash and change his clothes before he went home. There were cases where the disease had spread from the miner to his family and village. The delegates freely admitted that it would be difficult to persuade all the miners to take such precautions and that the spread of the disease was in part due to their own carelessness. But the authorities were also to blame, they were very slow to act. In Germany the Government had frankly confessed that it had not the means of coping with the disease, the necessary measures would cost too much. When, however, there was a proposal to increase the strength of the navy no such arguments were brought forth and yet the strength of the nation primarily depended on the health of the people. The German delegates insisted that it was a short-sighted policy to allow such diseases to spread. In the North of France, a French delegate explained, the disease had occurred in one coal-mine. The best medical authorities were sent there from Paris, the matter was thoroughly investigated, rigorous measures were taken, and the disease was stamped out. Many lives and much money would have been saved and much suffering and distress prevented if the authorities in Germany and Belgium had been as prompt to act as their neighbours of the Pas-de-Calais coalfields.

PROGRAMME OF THE ELEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

THE Eleventh International Congress of Hygiene and Demography will meet in Brussels from Wednesday, Sept. 2nd, to Tuesday, Sept. 8th, this year. On Tuesday, Sept. 1st, the international committee of the International Association of the Medical Press will likewise meet in Brussels. According to information just obtained in Brussels about 800 members of the Congress of Hygiene have been enrolled and it is not expected that more than from 1200 to 1500 members will attend. This would be only about half the number that were present at the ninth congress which met at Madrid in 1898. The explanation given to account for this difference is that Brussels is so close at hand and so well known. A pretext for a journey to Spain rarely occurs and therefore many more people availed themselves of the opportunity. However this may be, the falling off in the number of attendants is considered as a most fortunate circumstance. These congresses were being killed by their prosperity and the crowds which they gathered together became quite unmanageable. At Brussels it is hoped that there will be no such crush. On the other hand, there is every promise of good work being done from the technical point of view. The executive committee or central bureau is composed exclusively of practitioners in regard to hygiene.

In Belgium the public health services are connected with the Ministry of Agriculture, and the president of the executive committee is M. E. Beco, secretary-general of the

Ministry of Agriculture, intrusted with the general direction of public health services, of hygiene of the roads and ways, at Brussels. The vice-presidents are Dr. A. Devaux, inspector-general of the public health services, and M. J. Leclerc, president of the Central Statistical Commission. The secretary-general is the well-known sanitary reformer and faithful attendant at the International Congresses of Hygiene, Dr. Félix Putzeys, professor at the Liège University Faculty of Medicine. His address is No. 1, rue Forgeur, Liège, Belgium. Communications may also be sent to the secretary, Dr. Voituron, Inspecteur au Service de Santé et de l'Hygiène, Ministère de l'Agriculture à Bruxelles.

Apart from this general committee of management there are special committees for each of the two Divisions and the seven sections into which the Congress is divided. The first Division—that of hygiene—has seven sections. The Demographical Division apparently will not this time be subdivided, though at the previous congresses there were generally two sections of demography. As usual, the first section in the Hygiene Division is devoted to bacteriology in its relations to public health. Dr. van Ermengem, of the Ghent University, is president. The secretaries are Dr. Bordet, director of the Bacteriological Institute of Brabant, and Dr. Malvos, of the Liège University. Eminent authorities of different nationalities have been selected to present reports on various subjects. For instance, Dr. Bordet himself together with Dr. Denys of the Louvain University are assisted by Professor Max Gruber, Professor R. Pfeiffer, and Professor A. Wassermann, of the Universities of Munich, Königsberg, and Berlin respectively; and Dr. Belfandi, director of the Serotherapeutic Institute of Milan, will prepare and present a report on the action and origin of the active substances contained in the preventive and antitoxic serums. Dr. Roux of the Paris Pasteur Institute and Dr. Ehrlich of the Royal Institute of Experimental Therapeutics, Frankfort-on-the-Main, will report on the best methods of measuring the active properties of serums. Nine reporters from nine different nationalities will deal with anti-diphtheritic serum from the prophylactic point of view. Then there will be a report with regard to the unification of the processes for the bacteriological analysis of water.

The second section deals with food questions and the connexion between the science of the chemist and that of the veterinary surgeon in their application to hygiene. This section will unite with the first section to discuss a report on tuberculosis in men and in animals. The secretaries of the second section are Dr. Stubbe, inspector of the veterinary services, and Dr. van Dam, food inspector, both at the Ministry of Agriculture, Brussels. There will be reports in this section on all that relates to milk-supply, on the sterilisation of tinned and preserved provisions, on the pasteurisation of milk, &c.

The third section is entitled Sanitary Technology and comprises the sciences of the architect and the engineer as applied to hygiene. M. Hachez, Ingénieur Inspecteur au Service de la Voirie, &c., Ministère de l'Agriculture à Bruxelles, is the secretary. There will be a report on the bacteriological treatment of sewage, and Mr. Gilbert J. Fowler, superintending chemist at the sewage works, Manchester, together with Dr. Rideal, vice-president of the Society of Public Analysts, London, and Dr. Dunbar of Hamburg, M. Launay of Paris, and M. Rolants of Lille, will draw up this document. Then the question of the separate system of drainage will be reported upon, and for this Mr. Roechling, civil engineer, of Leicester, is one of the reporters. The next subject has also two Englishmen among the reporters—namely, Mr. J. Allen Howe, B.Sc., conservator of the Geological Museum of London, and Mr. Horace B. Woodward, F.R.S., of the Geological Survey of England. Their subject is the conditions that should exist when waters from chalk soils have to be utilised for drinking purposes. Mr. Roechling is also to report on the sanitation of public roads and there are to be reports on the heating and ventilation of dwellings.

The fourth section is devoted to industrial and professional hygiene. The secretary is M. Joseph Brughmans, factory inspector at the Ministère de l'Industrie et du Travail à Bruxelles. The first question for consideration is that of ankylostominasis. There are Belgian, French, and two Hungarian reporters on this subject. The second report is on lead poisoning and Dr. T. Oliver of the Durham University, the medical expert attached to the Home Office, is one of the reporters. The physiology of fatigue and consequently the methods that should govern the organisation of various forms of labour is the third subject. Belgian, French, Italian, and German reporters have been appointed. The conditions of the linen factories and of the brush making trades are each the subjects of special reports. On the last-named subject Dr. T. M. Legge of the Home Office, London, is a reporter, while on the linen trade, Mr. E. H. Osborn, His Majesty's inspector of factories, Home Office, London, and Dr. H. S. Purdon of Belfast are reporters. Miss A. M. Anderson, His Majesty's principal lady inspector of factories, Westminster, is one of the reporters on the question of small workshops and home industries.

The fifth section is devoted to the hygiene of travelling or transport. M. Blancquaert, administrator of the Belgian State railways, will preside, and Dr. de Landsheere, Brussels, is the secretary. The means of preventing the spread of infectious diseases among railway servants and the best methods of disinfecting carriages that have served for the transport of passengers, cattle, or merchandise, are among the subjects to be discussed in this section.

The sixth section is somewhat of a mixed section, for it is to deal with administrative hygiene and presumably sanitary legislation with the prophylaxis of transmissible diseases, workmen's dwellings, and the hygiene of childhood. M. van Hulst, pharmacien attaché à l'Inspection du Service de Santé, Ministère de l'Agriculture à Bruxelles, is secretary. The first report is on the feeding of infants. Dr. P. Budin of Paris is one of the reporters. The inspection of schools is the next subject and then comes the war against tuberculosis on which Dr. Brouardel and Dr. Arthur Newsholme, medical officer of health of Brighton, are among the reporters. The question of the prevention of the plague has German, French, Dutch, and Hungarian reporters, but there are no Anglo-Indians, though they possess so much practical experience of this disease. Then there is a long list of the various ways in which the public authorities may help to solve the question of the housing of the poor. This, again, is a subject on which a British reporter might have had much to say, but there is no English name on the list.

Finally, the seventh section is on colonial hygiene and Dr. Voituron, secretary of the Congress, is also secretary for this section. The diet of Europeans living in hot climates is the first subject on the list and Major Ronald Ross, C.B., Walter Myers Lecturer in the School of Tropical Medicine at Liverpool, is among the reporters. The prophylaxis of the sleeping sickness, that of beri-beri, and that of small-pox are the subjects of three reports. Dr. Patrick Manson, of the London School of Tropical Medicine, is one of the reporters. Dr. W. J. R. Simpson, of the London School of Tropical Medicine, is also on the list of reporters, and will deal with the question of organising the teaching of suitable medical treatment for colonists. Other subjects may be introduced, but these are the topics on which printed reports will be issued, if possible before the Congress meets, so that they may be satisfactorily discussed.

For the division of demography a great number of papers are announced. M. Armand Julin, Directeur au Ministère de l'Industrie et du Travail à Bruxelles; Professor Mahaim, à l'Université de Liège; and M. Vilmart, chef de la division d'hygiène de la ville de Bruxelles, are the joint secretaries of this Division. The reports to be presented deal with: (1) the causes of mortality and how they are registered in the different countries; (2) infant mortality and the necessity of uniform statistics; (3) an international nomenclature for the registering of the causes of death; (4) the means which demography affords of foretelling the decrease or increase of population; (5) the best coefficients for the study of the increase or decrease of populations due to marriages, births, and deaths; (6) the theory that the fluctuation in populations depends on the balance between their resources and their requirements; (7) statistics as to urban populations; (8) death-rates according to occupations; (9) how to deal with the spread of insanity; (10) mortality due to alcoholism; (11) migrations, over-population of towns; (12) what are the advantages of special statistics in regard to the poor; (13) statistics and causes of suicides; and (14) inventory and critical study of archives from the demographical point of view. Among the numerous reporters appointed to deal with these 14 different demographical subjects the only English name is that of Dr. J. F. W. Tatham, Superintendent of Statistics, General Register Office, Somerset House, London.

It is to be hoped that British sanitary reformers will take

a more active part in the work of this Congress than they have done in regard to previous congresses. It is the greatest meeting of the kind held and it has had considerable influence in guiding various legislative assemblies. In any case, there is still time to join and there are few sanitary reformers who would not have something to say on one or more of the above subjects. Papers dealing with other questions should be sent in two months before the opening of the Congress. They may be written in any language, but must have a summary of their contents in French. During the Congress speeches are to be limited to a quarter of an hour and no one is to speak more than twice on the same subject. The executive committee will extract and publish beforehand all such new facts as may be found in these papers which are likely to lead to discussion. Anyone interested in public health questions may become a member of the Congress by applying to the secretary and sending the entrance fee of 25 francs or £1. The wives and daughters of members may, on paying a fee of 10 francs, be admitted to be present at the discussions and excursions without participating in the labours of the Congress. There will, of course, be many excursions and receptions, but the details are not yet settled. Finally there is to be an exhibition of any objects, plans, and drawings that are related to one or more of the subjects which the Congress is to discuss. The exhibitors will not be charged for the space allotted to them, but they must themselves defray the cost of the installation of their exhibits.

METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are some of the principal amounts, additional to those already announced in THE LANCET, which have been collected for the Fund :—

	£	s.	d.
Christ Church, Lancaster gate	1593	0	0
St. Paul's, Onslow-square	435	0	0
Holy Trinity, Sloane-street	420	0	0
St. Mary's, Bryanston-square	371	0	0
St. Mark's, Hamilton-terrace	257	0	0
St. Stephen's, South Dulwich	228	0	0
St. Luke's, Redcliffe-square...	180	0	0
Essex Church, Notting-hill-gate	173	0	0
Brompton Parish Church	158	0	0
Holy Trinity, Sydenham	152	0	0
The Temple Church	134	0	0
St. Paul's, Upper Norwood...	113	0	0
St. Saviour's, Upper Chelsea	109	0	0
St. Bartholomew's, Sydenham	107	0	0
St. Mark's, Reigate	104	0	0
All Souls', Hampstead	80	0	0
St. Paul's, Forest-hill	54	0	0
St. John the Evangelist, Blackheath	79	0	0
Brixton Wesleyan Circuit	74	0	0
Park Congregational Chapel, Crouch-end	50	0	0
St. Saviour's, Brixton-hill	50	0	0
St. Saviour's, Paddington	84	0	0
Bromley Congregational Church, Kent	63	0	0
Gray's Inn Chapel	40	0	0
Christ Church, Trent	40	0	0
St. George's Parish Church, Beckenham	77	0	0
Christ Church, Westminster	36	0	0
St. James's, Marylebone	30	0	0
St. John's, Notting-hill	46	0	0
Orpington Parish Church	46	0	0
Clapton-park Congregational Chapel	33	0	0
St. Mary's, Stoke Newington, Old Church	42	0	0
Stoke Newington Parish Church...	82	0	0
St. Stephen's, Portland-town	35	0	0
Chislehurst Wesleyan Church	34	0	0
Streatham Parish Church and Chapel of Ease	63	0	0
St. Paul's, Herne-hill	54	0	0
St. Agnes, Kennington-park	52	0	0
West Wickham Parish Church	47	0	0
All Saints', Margaret-street	51	0	0
St. Luke's, Hackney	49	0	0
Berkeley Chapel, Mayfair	30	0	0
St. Cuthbert's, West Hampstead	32	0	0
Church of the Ascension, Blackheath	31	0	0
Morden Parish Church	36	0	0
St. Andrew's, Whitehall Park	52	0	0
All Saints', North Peckham	57	0	0
West London Mission	35	0	0
Hammersmith Parish Church	33	0	0
St. Anne's, Wandsworth	60	0	0
St. Andrew's, Leytonstone...	86	0	0
All Saints', Upper Norwood	31	0	0
Brixton Unitarian Church	38	0	0
St. Alban's, Holborn	34	0	0
St. Giles's-in-the-Fields Parish Church	38	0	0
St. Mark's, Notting-hill	33	0	0
Christ Church, Bromley Park	35	0	0
All Saints', Clapham Park	48	0	0

Looking Back.

FROM

THE LANCET, *SATURDAY*, JUNE 25, 1825.

FOREIGN DEPARTMENT.

ANALYSIS OF FOREIGN MEDICAL JOURNALS.

REVUE MEDICALE—APRIL.

Curious case of the escape of an ear of Barley through the sides of the Chest, about five months after it had been swallowed.

Francis Perron, aged 19, swallowed, towards the latter end of August, 1824, a green ear of barley. This circumstance occasioned no particular uneasiness at the time, and Perron thought nothing more of it. On the 9th of September, however, whilst working at the wharf as usual, he became overheated, and drank a glass of cold water. Four hours after, a very severe pain was felt on the right side, in the vicinity of the seventh and eighth ribs, accompanied with oppression, cough, and sanguineous expectoration. The next morning the symptoms were appeased, but appeared to renew themselves every two days. The man gradually grew worse, and was admitted into the hospital on the 14th of September. At this time the cough was more frequent, but the expectoration less; the respiration, although difficult, sounded well in all parts of the chest: a slight mucous guggle was perceptible, and no sign of *hegophonie* was discoverable; at this time a pricking sensation was felt about the ribs before named, when the cough came on. The pulse was quick and soft, the skin hot, the tongue clean, and the bowels were constipated; a swelling could now be perceived on the right side of the thorax. Frequent general and local bleedings, with a strict antiphlogistic regimen, allayed these symptoms; but they again appeared on the 19th and 22nd. The lower part of the chest became prominent toward the convexity of the ribs, and a painful circumscribed tumour was easily detected. The cough continued, and accompanied with a copious mucous expectoration.

27th. Fluctuation in the tumour very perceptible; on pressing on it, the cough, expectoration, and pain, became increased; by continuing the pressure, blood was ejected as in hæmoptysis. The man lay on his left side, and now expectorated a thick puriform fluid with the mucus, communicating a putrescent flavour to the taste. M. LISFRANC was consulted, who considered it imprudent to open the tumour. The application of the stethoscope gave a dull feeble sound in this part, but there was no *tintement metallique*. On the 18th of October, an issue was put on the apex, and on the 25th another at the base of the tumour; it being thought probable, on the eschars coming out, a puncture might be made through one of the wounds, or that the thinness of the covering of the abscess would favour the escape of the matter. This, as was expected, did happen on the 6th of November, but between the two wounds. A large quantity of pus escaped, and the symptoms rapidly subsided. About a month after the first discharge, a new fistula formed, from which there came, on the 30th of December, a longish body of a green colour, about two inches in length, and everywhere covered by a thick mucous plastering.

On the 11th of January, thirteen days after the appearance of the first body, another presented itself quite similar to the preceding, but with the barb, and not the pedicle, foremost. These two substances were immediately recognised, as the blade of the *hordeum murinum*, which had been swallowed five months previously. Perron now grew better, and in a short time was perfectly well. One circumstance was observed, on the discharge of the last piece, worthy of remark—that of the forcible escape of air through the last fistulous opening at each expiration.

This lasted twenty-four hours, and returned only when the man lay on his back, or coughed. Percussion furnished no criterion, on account of the position and the extent of the abscess, allowing but of its imperfect application. Many cases have occurred of hard bodies making a passage through different structures; but, as M. BALLY says, "That a green

flexible substance, like an ear of barley, should be able, without becoming either altered or bent, to traverse through one half of the thorax, is a phenomenon almost incomprehensible." It is presumed the barley-ear did not separate in two until after the abscess had formed, otherwise it would most probably have effected two distinct passages. The fluid contained in the abscess allowing of the latter piece to change its position, and make its transit at its opposite point.—*Sittings of the Royal Academy of Medicine.*

THE BATTLE OF THE CLUBS.

ON p. 86 of our advertisement columns in this number of THE LANCET will be seen a notice concerning the County of Durham Medical Union. The Friendly Societies Medical Association of Sunderland is now advertising for a second medical officer and we beg that any of our readers who may be thinking of applying for this post will, in the first place, consult either Messrs. Graham and Shepherd, 32, John-street, Sunderland, who are the secretaries of the County of Durham Medical Union, or Mr. Garforth Drury, 55, Pilgrim-street, Newcastle-on-Tyne, who is the secretary of the Northumberland and Newcastle Medical Association. It is most important that medical men should assist medical unions in their efforts to secure increased payments for contract work and that applicants should be made aware of the false position in which they will find themselves should they accept lower rates of pay than those agreed upon by the medical unions in question.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8914 births and 4138 deaths were registered during the week ending June 20th. The annual rate of mortality in these towns, which had been 14·9, 14·3, and 13·9 per 1000 in the three preceding weeks, rose again last week to 14·3 per 1000. In London the death-rate was 13·1 per 1000, while it averaged 14·8 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 4·7 in Hornsey, 6·2 in Willesden, 6·3 in Handsworth, 6·7 in Tottenham, 7·1 in East Ham, 7·4 in Kings Norton, 7·6 in Ipswich, and 8·0 in Southampton; the highest rates were 19·0 in Sheffield, 19·8 in Grimsby and in Huddersfield, 21·0 in Rotherham, 22·0 in Birkenhead, 23·0 in Middlesbrough, 28·5 in Wigan, and 28·7 in Coventry. The 4138 deaths in these towns last week included 415 which resulted from the principal infectious diseases, against 434, 397, and 404 in the three preceding weeks; of these 415 deaths 136 were referred to measles, 99 to whooping-cough, 73 to diarrhœa, 42 to diphtheria, 38 to scarlet fever, 20 to "fever" (principally enteric), and seven to small-pox. In Hornsey, Southampton, Northampton, Derby, York, South Shields, Gateshead, Newcastle-on-Tyne, and in 10 other smaller towns no death from any of these diseases was registered, while they caused the highest death-rates in Great Yarmouth, Aston Manor, Coventry, Wigan, Oldham, Sheffield, Middlesbrough, and Merthyr Tydvil. The greatest proportional mortality from measles occurred in Wolverhampton, Birmingham, Coventry, Wigan, Sheffield, and Middlesbrough; from scarlet fever in Merthyr Tydvil; from diphtheria in Oldham; from whooping-cough in Birkenhead, Burnley, and Sheffield; and from "fever" in Grimsby. Three fatal cases of small-pox were registered in Oldham, two in Liverpool, one in Manchester, and one in Bradford, but not one in any other of the 76 large towns. The number of small-pox patients under treatment in the Metropolitan Asylums hospitals on Saturday last, the 20th inst., was 70, against 60, 72, and 64 on the three preceding Saturdays; 16 new cases were admitted during the week, against 10, 24, and nine in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 1771, 1785, and 1710, at the end of the three preceding weeks had further declined to 1649 at the end of last week; 170 new cases were admitted during the week, against 225, 210, and 145 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 186, 171, and 141 in the three preceding weeks, further declined last week to 134 and were 33 below the number in the corresponding period of last year. The causes of 40, or 1·0 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Nottingham, Bradford, Leeds, and in 50 other smaller towns; the largest proportions of uncertified deaths were registered in Liverpool, St. Helens, Warrington, Manchester, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 18·4, 18·2, and 17·5 per 1000 in the three preceding weeks, further declined to 17·0 per 1000 during the week ending June 20th, but was 2·7 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 13·7 in Leith and 14·5 in Paisley to 18·2 in Dundee and 20·1 in Perth. The 558 deaths in these towns included 16 which resulted from whooping-cough, 14 from diarrhœa, nine from measles, four from scarlet fever, three from "fever," and one from diphtheria, but not one from small-pox. In all, 47 deaths resulted from these principal infectious diseases last week, against 70, 65, and 49 in the three preceding weeks. These 47 deaths were equal to an annual rate of 1·4 per 1000, which corresponded with the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 28, 25, and 20 in the three preceding weeks, further declined last week to 16, of which eight were registered in Glasgow, four in Edinburgh, and two in Paisley. The deaths from diarrhœa, which had been 18 and 20 in the two preceding weeks, declined again to 14 last week and included 11 in Glasgow. The fatal cases of measles, which had been seven, nine, and three in the three preceding weeks, rose again last week to nine, of which four occurred in Glasgow, three in Edinburgh, and two in Paisley. The deaths from scarlet fever, which had been six, seven, and three in the three preceding weeks, increased again to four last week, and included two in Edinburgh. Of the three fatal cases of "fever" recorded last week, two occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 114, 111, and 75 in the three preceding weeks, further decreased last week to 73, and were 23 below the number in the corresponding period of last year. The causes of 19, or more than 3 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 22·2, 22·7, and 22·4 per 1000 in the three preceding weeks, further declined to 19·7 per 1000 during the week ending June 20th. During the past four weeks the death-rate has averaged 21·0 per 1000, the rates during the same period being 13·3 in London and 17·7 in Edinburgh. The 143 deaths of persons belonging to Dublin registered during the week under notice showed a decline of 20 from the number in the preceding week and included 11 which were referred to the principal infectious diseases, against seven, ten, and nine in the three preceding weeks; of these six resulted from whooping-cough, three from small-pox, one from measles, and one from scarlet fever, but not one from diphtheria, from "fever," or from diarrhœa. These 11 deaths were equal to an annual rate of 1·5 per 1000, the death-rates last week from the same diseases being 1·5 in London and 1·6 in Edinburgh. The deaths referred to whooping-cough, which had been two, one, and five in the three preceding weeks, further rose last week to six. The fatal cases of small-pox, which had been three and one in the two preceding weeks, increased again to three last week. The 143 deaths in Dublin last week included 29 of children under one year of age and 26 of persons aged 60 years and upwards; the deaths of infants corresponded with the number in the preceding week, while those of elderly persons showed a marked decline. One inquest case was registered, but no death from violence was recorded; and 57, or almost 40 per cent., of the deaths occurred in institutions. The causes of seven, or nearly 5 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon C. W. Buchanan-Hamilton to the *Leviathan*. Staff Surgeon A. G. Andrews to the *St. Vincent*. Surgeon T. B. Shaw to the *Hyacinth*.

ROYAL ARMY MEDICAL CORPS.

Lieutenant Hughes joins at Aldershot and is posted to the Cambridge Hospital for duty. Captain L. N. Lloyd joins at Aldershot and is posted to the Connaught Hospital for duty. Captain G. Dansey-Browning is posted for duty to the new Princess Louise Hospital at Alton. Lieutenant-Colonel W. Watson is appointed to the medical charge of the Louise Margaret Hospital for Women and Children at Aldershot.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Kent: Surgeon-Lieutenant C. M. Anderson resigns his commission. Dated June 20th, 1903. 1st Norfolk: Surgeon-Major S. W. Woollett resigns his commission. Dated June 20th, 1903.

Rifle: 3rd Volunteer Battalion the Queen's (Royal West Surrey Regiment): Surgeon-Captain J. F. Hall resigns his commission. Dated June 20th, 1903. 3rd Volunteer Battalion the East Surrey Regiment: Alfred Landon Watler Whitehouse to be Surgeon-Lieutenant. Dated June 20th, 1903. 3rd Glamorgan: Surgeon-Lieutenant G. A. Stephens to be Surgeon-Captain. Dated June 20th, 1903. 4th Middlesex (West London): Frederic Richard Miller to be Surgeon-Lieutenant. Dated June 20th, 1903.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Woolwich Companies: Captain A. S. Greenway to be Major. Dated June 20th, 1903.

THE WOOLWICH EXPLOSION.

In connexion with the recent deplorable lyddite explosion at the Royal Arsenal, we venture to express a hope that the most liberal interpretation of existing laws and regulations regarding the allowances to be granted to the wives and families of the killed and injured workmen will be given by the War Office, and we are glad to recognise that there seems to be every disposition on the part of the War Minister to act in this spirit. It has to be borne in mind that notwithstanding every precaution that can be taken to guard against accident the workmen who deal with high explosives of a horribly dangerous character run greater hazards in their work than probably fall to the lot of a soldier in war. It is lamentable to think that this nation is driven in times of peace and in order to prepare for war to manufacture such terrible instruments of destruction just because all the other military Powers do so, but so it is. All that can be done in the meantime is to see that no possible precaution is neglected and when accidents do unhappily occur to insure for the victims' wives and families generous and sympathetic treatment.

THE RESULT OF THE COURT-MARTIAL IN THE CAPE RAGGING CASE.

Although those directly concerned in this case may fairly congratulate themselves on the result of the late court-martial, it will nevertheless be held by all, whether military officers or civilians, who have the interest of the army at heart that the sooner it is understood that the King's uniform cannot be permitted to cover conduct of this sort the better. In saying this we are content to form our judgment entirely on the admissions that were made by the officers themselves in their evidence before the court as to what had taken place at Cape Town. The whole transaction was, to say the least, discreditable. We do not hear anything of scandals of this sort in the Royal Navy or in the scientific branches of the military service—the Royal Artillery and the Royal Engineers or in the Royal Army Medical Corps—and it is time that we ceased to hear of them elsewhere.

THE SOMALILAND WAR.

The white man's burden is a heavy and pretty continuous weight in supplying the calls of the Empire. Things have not been going well in Somaliland, where the British troops are in a very awkward position owing to the close proximity of the bulk of the Mullah's forces which are threatening General Manning's line of communication. Some reinforcements have been sent from Aden and others are ordered from India and Major-General Egerton, who has had much and recent experience in Indian warfare, has been nominated for the command in Somaliland. The difficulties of the climate and country are very great, owing to the want of water for one thing and to that of suitable transport for another. The hospital arrangements and supplies will need to be very carefully thought out in order to adapt them to the nature and requirements of such a campaign. These have been engaging the attention of the military medical service in India in connexion with the reinforcements proceeding from that country.

THE ROYAL ARMY MEDICAL CORPS SOUTH AFRICA FUND.

A sum of about £110 remains in the hands of the honorary treasurer, the greater portion of which has been returned from South Africa, being the unexpended balance of an amount sent there for local requirements during the war. With a view to close the fund finally it is proposed to hand over the money to the Compassionate Branch of the Royal Army Medical Corps Fund, lately organised by the Director-General, as it will then be available for cases of need amongst the men, women, and children of the corps. H.R.H. the Princess Christian has graciously signified her approval of the suggestion, which reaches us signed by M. Symonds (honorary treasurer), M. L. Muir (honorary secretary), and H. S. Muir (chairman of the committee). Should no expression of dissent be received from subscribers within the next few days it will be assumed that they concur.

DEATHS IN THE SERVICES.

Inspector-General of Hospitals Michael Waistell Cowan, M.D. Edin., R.N. (retired), at Leigh, near Worcester, on June 20th, aged 72 years. He entered the navy as a surgeon in 1854 and became staff surgeon in 1864, fleet surgeon in 1876, and inspector-general of hospitals in 1888. He retired in 1890. He served in the Black Sea during the Russian war.

Correspondence.

"Audi alteram partem."

ENTERIC FEVER AMONG THE NATIVES OF INDIA AS A SOURCE OF ARMY DISEASE.

To the Editors of THE LANCET.

SIRS,—Those of us who in the years past have recognised the identity of the Indian enteric fever with that existent among other sections of the world's races, regarding it everywhere as a specific disease and, so far as the army is concerned, referring its source of origin as a rule to the native or other communities with which the soldier comes in contact during his temporary sojourn abroad, will find in the valuable paper by Captain L. Rogers, I.M.S., on the Differentiation of the Continued and Remittent Fevers of the Tropics by the Blood Changes, published in THE LANCET of May 30th, p. 1500, and in a paragraph in the recently issued Army Medical Report, 1901, p. 160, Enteric Fever among Natives of India, statements which must, I think, remove the doubt existent among some both as to the presence of the disease among the natives of that land and as to the source from which the major part of the army disease derives its existence and place the basis of preventive measures on assured grounds.

A historical sketch of the line of advancing knowledge of this disease in India, culminating in what we may now regard as the recognition of its identity with that elsewhere existent, among natives as among Europeans and half-castes, and owning one common universal cause, though a subject of considerable interest, would cover too much of your valuable space. But as partly elucidatory of the progress of thought and risking the possibility of being regarded egotistical, I may say that in 1882, from my knowledge of the writings of others and from personal observations, I noted[1] that "the existence of the disease in India is beyond the region of doubt and in clinical and post-mortem details at least it follows the

[1] Enteric Fever, illustrated by Army Data at home and abroad, p. 76.

European disease"; that (p. 138) "the specific theory more closely embraces the military data than any other and is the only one which meets the requirements of the facts"; that evidence in support of this conclusion so far as India was concerned was not wanting; and that (p. 193) the "chief obstacle to the view of a derivation of the enteric fever among the military from the civil population rests in a disbelief on the part of some, and a statement of denial on the part of a few, that this disease is one from which the natives of India suffer." Yet even at that time the susceptibility of the native (half-caste also) to the disease, both in his own country and when outside it, was beyond all doubt, the only questions open being the degree to which the disease prevailed, the modifications it possibly assumed, and the period of life during which it was mainly represented among them. It was on these points noted that according to the Annual Health Report of Calcutta for 1880 a considerable amount of fatal fever of a *continued* type existed among natives irrespective of race and that among children under one year of age there were many deaths from "a combination of fever and diarrhœa," and the suggestion was made that the reason why enteric fever was so seldom observed among adults coming under the notice of European medical men was that as in small-pox, so in this disease, an immunity had been purchased by an attack in early life. The means of diagnosis of the Indian fevers now available were not then existent and actual proof of the presence of enteric fever among natives as a common disease was not forthcoming and hence the continuance of doubt, but what was then wanting has now been fully supplied by the application of Widal's test to the blood. Some years ago Surgeon-Major Freyer of the Army Medical Service brought forward some results of the application of this method to the blood of adult natives in which the outcome of his observations suggested a prior attack of the disease as a possible and probable explanation, and the publication referred to in the early part of this letter may, I take it, be regarded as conclusive of the subject under consideration. Captain Rogers (p. 1504) writes: "The above brief summary is sufficient to prove that typhoid fever is a common continued fever of the natives of India and that it differs in no noteworthy respect from the same disease in Europeans in this country," and (p. 1508) "the so-called 'non-malarial remittent' fever in natives has been shown by the serum test to be nothing but typhoid fever." And the notice in the Army Medical Report, 1901 (p. 160), is: "It is now generally admitted not only that enteric fever does attack natives of India but that cases are by no means of such rare occurrence as was at one time supposed. At Kirkee seven natives were treated for the disease during the year in the native section of the station hospital, the diagnosis in each case being verified by Widal's test. At Peshawur, during the time that enteric fever was most prevalent among the troops, there were several suspicious deaths from fevers in the Royal Artillery and Light Infantry Bazaars, and at Quetta cases resembling enteric fever occurred among natives just before the disease broke out in barracks. In the Barrackpore report the occurrence of enteric fever among the native population is put forward as an explanation of isolated cases among the troops." And, indeed, so far as the last sentence is concerned this is the view taken and enunciated by some of us for the last 20 years at least.

Hence, then, the view taken by your reviewer of the Report of the Sanitary Commissioner with the Government of India for 1897 in THE LANCET of August 19th, 1899, p. 495, that, assuming enteric fever to be a parasitic disease, "the bacillus must be very widely distributed in India," and to which I replied in a letter to you[2] giving details tending to meet that requirement, is confirmed beyond all reasonable doubt, and now I presume that we may all settle down in the conviction that enteric fever, wherever met with and in whatever race, is one and the same disease and that, so far as the army is concerned, the source of its disease, putting aside occasional importation and occasional transfer in its own coterie, is everywhere the civil and native community of the country in which it is quartered, and that the means for its curtailment (the idea of elimination not being reasonable under the conditions which exist) are to be sought in the reduction of the very susceptible human material sent out to India and elsewhere and the safeguarding as far as possible of the lines of communication between the native and military sections.—I am, Sirs, yours faithfully,

FRANCIS H. WELCH,
Lee, June 15th, 1903. Surgeon-Colonel (retired), A.M.S.

[2] THE LANCET, Sept. 9th, 1899, p. 739.

THE IMPERIAL VACCINATION LEAGUE.

To the Editors of THE LANCET.

SIRS,—The Imperial Vaccination League has now been in existence for a year. It has had in view two objects: first, to study the working of the Vaccination Act of 1898 in order to consider if in any way the Act or its administration can be improved and the opposition to vaccination diminished; and, secondly, to press upon the attention of all classes of the community the immense value of vaccination and re-vaccination as a protection against epidemic small-pox. The league has so far been mainly occupied in making a critical study of the Vaccination Act of 1898. As a result of this study it recommends the general compulsory revaccination of children before leaving school; the extension of the conscience clause to revaccination as well as to primary vaccination; the transference of the vaccination laws from the Poor-law to some other authority charged with public health functions; that the same security of tenure be given to the public vaccinator as is now enjoyed by the vaccination officer; and that all establishments for the preparation in England of calf lymph be placed under Government inspection or control. The league does not approach the subject of the administration of the Vaccination Act from the point of view of the interests of the medical profession or of the public vaccinators. It inquires only what will best promote vaccination among those sections of society now prejudiced against it. Should it appear on investigation that the cost of vaccination under the Act of 1898 has been in some cases unreasonably great the league would favour its being reduced. It believes it to be of the utmost importance that the medical profession should be moderate in its pecuniary demands, that nothing should be done to make martyrs of anti-vaccinationists, and that vaccination and revaccination should be efficient as well as obligatory.

The league was formally constituted at a large and influential meeting of its members, over which the Duke of Northumberland presided, on Dec. 12th, 1902. On Jan. 14th, 1903, a deputation representing merchants, bankers, shipowners, large employers of labour, municipal authorities, dockyard companies, heads of public schools and colleges, solicitors, insurance companies, sanitary authorities, the Royal Colleges of Physicians and Surgeons, wharfingers, traders, givers of concerts and influential persons generally, waited on the Right Hon. Walter Long, M.P., President of the Local Government Board, to urge upon him the importance of making revaccination obligatory before the legal age for employment and of providing an adequate supply of glycerinated calf lymph available for all classes of the community. Many sheets of signatures of influential persons in support of obligatory revaccination were handed to Mr. Long by members of the deputation. The President, in reply, urged the league to extend its work into the country, and especially to assist candidates at Parliamentary elections to meet the pressure put upon them by the opponents of vaccination. The league desires to act upon Mr. Long's advice. It has recently issued a paper entitled, "Ten Answers to Questions on the Subject of Vaccination for the Use of Parliamentary Candidates" which can be had from the Secretary of the Imperial Vaccination League, 53, Berners street, London, W. A political secretary (Dr. Rees Roberts) has been appointed whose duty it will be to attend Parliamentary elections and to form local committees in defence of vaccination. For this extension of the work of the league an additional sum of £500 a year for three years will be required. The executive committee desires to find 100 friends who will each promise five guineas a year for three years, or a larger number who will make up the amount wanted in smaller sums. It is not probable that the effort to produce a Revaccination Act need last much more than three years. Such an Act can be passed within that time if the Government and the country desire it. If, on the other hand, people deliberately prefer frequent epidemics of small-pox to vaccination they must have their own way and take the consequences. Meanwhile the league will do what is possible to convert the

majority to other and more social views. Subscriptions or donations to the funds of the league may be sent by crossed cheque to the Secretary, Imperial Vaccination League, 53, Berners-street, London, W., or to myself.

I am, Sirs, yours faithfully,

E. GARRETT ANDERSON,
Honorary Secretary, Imperial Vaccination League.

4, Upper Berkeley-street, London, W., June 20th, 1903.

BLOOD PRESSURE.

To the Editors of THE LANCET.

SIRS,—I have to thank your correspondent Dr. C. P. White, writing in THE LANCET of June 20th, p. 1767, for a correction—the term "cubic" having unfortunately crept into the type-written copy of my address[1] in connexion with millimetres of mercury pressure, that term being, as he says, the measure of volume. With regard to Dr. White's reference to the diminution of the partial pressure of the oxygen in the higher altitudes being possibly the cause of the rise in blood pressure, it may, I think, be an important factor in the background as it were; but I am disposed to think that other causes are at work. My conclusions were strictly limited to the data observed, which pointed to the proximate causes of the rise. I am satisfied that the primary effect of altitude is to lower the arterial pressure and that in winter this effect is apparent in the medium altitudes; but that in the higher altitudes other factors of causation step in which raise the pressure. It is possible, for instance, that temperature is one of these. The whole subject requires further investigation. When the Yungfrau railway is extended to 13,366 feet a good opportunity for this inquiry will be afforded, inasmuch as the railway carriage will provide the important conditions of rest and equable temperature. The interesting paper of Dr. Theodore Zangger in your issue of this week shows the necessity for such an inquiry and I am looking forward to an opportunity of doing further work in this direction. Dr. White mentions the increased pulse-rate in balloon ascents up to the height of 24,000 feet, which is interesting, but may not the psychological element in ballooning somewhat impair the reliability of any conclusion as to the effect of altitude on the pulse-rate?

I am, Sirs, yours faithfully,

GEORGE OLIVER, M.D., F.R.C.P. Lond.

Harrogate, June 20th, 1903.

SYPHILIS—A QUESTION OF PROCEDURE.

To the Editors of THE LANCET.

SIRS,—I should very much like to know what is the proper course of procedure in the following case.

A patient is seen at the out-patient department of a hospital and is found to have secondary syphilis with ulcerations of tonsils, lips, &c. He states that he is a baker's assistant and that whilst not handling the dough *he handles the baked loaves just prior to their being sent out for consumption.* On being told that he must not continue this work he refuses, saying that he cannot afford to give up his "job."

What course should I adopt? 1. Should I write to his employer? If in this case he is dismissed, do I render myself liable for damages in a court of law? 2. Should I communicate with the medical officer of health of the district? And if he is subsequently dismissed owing to this officer's action, do I still render myself liable? 3. Should I take no notice and allow this filthy state of things to continue?

I am, Sirs, yours faithfully,

J. GAY FRENCH, M.B. Lond., M.R.C.S. Eng., L.R.C.P. Lond.

June 22nd, 1903.

*** 1. The employer cannot be written to without a breach of professional confidence. But the breach would, we think, be pardonable. It is a complete answer to any civil proceedings for libel or slander that the statement complained of is true, and to any criminal proceedings that it has been made in the public interest. 2. The medical officer of health might be communicated with but his power of interference is not evident to us as syphilis is not a notifiable disease. 3. We think that a distinct warning might be given to the unfortunate sufferer that unless he desists from his work until he is no longer infectious his plight must be revealed to his employer—a threat, the legality of which is perhaps doubtful. Dr. French should ascertain the views of the hospital authorities. This is important.—ED. L.

[1] THE LANCET, June 13th, 1903, p. 1643.

APPENDICITIS: A SUGGESTED REASON FOR ITS INCREASE.

To the Editors of THE LANCET.

SIRS,—The occurrence at the same time in one's own private practice of three cases of appendicitis, each demanding operation, is provocative of thought. Ten years ago cases of "perityphlitis" came under notice occasionally and a certain number of people were taken ill and died from "inflammation of the bowels" or "acute peritonitis" in whom an appendicitis was probably at the root of the mischief. My recollection is that such cases were rare and I do not remember one appendicectomy at the Royal Infirmary, Liverpool, during my period of studentship, 1887–91. At the present time appendicitis is about us on every hand. The reason for its sudden increase has yet to be shown. I do not believe it to be due to any process of evolution; the same people are having appendicitis now who did not have it ten years ago. The cause, whatever it is, must be one affecting the mass of the people, rich and poor; it must be common to all countries of high civilisation and big towns; it must be coincident with the increase in the disease.

The present conditions of food-supply and distribution may give the key to the situation. Probably four-fifths of the chief perishable comestibles are frozen or chilled for transmission or collection before reaching the consumer. Chilled or frozen meat, fish, poultry, rabbits, game, &c., are notoriously prone to rapid decomposition when removed from cold store; also, they degenerate more rapidly after cooking than unfrozen articles. Following the argument it may be that the ingestion of chilled or frozen food especially liable to rapid decomposition may result in a more septic state of the intestine than in the pre-cold storage days, and this greater septicity may in its turn account for the greater virulence of those irritations to which the cæcum and appendix have always been prone.

I am, Sirs, yours faithfully,

S. KELLETT SMITH, F.R.C.S. Eng.

Liverpool, June 22nd, 1903.

THE GENERAL MEDICAL COUNCIL AND THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.

To the Editors of THE LANCET.

SIRS,—The letter of Dr. R. W. C. Pierce in THE LANCET of June 20th, p. 1768, is interesting as evidence of a "reversal of policy" on the part of the Colleges. This is to be expected. The increasing number of universities in the provinces and the establishment of facilities for obtaining medical degrees in London tend to diminish the demand for the Conjoint diploma, for no man will take a diploma when he has reasonable facilities for taking a degree, provided the respective standards nearly approximate. It is on these grounds that the Colleges should, I submit, be merged into the University of London, for though the Colleges have done good work in the past the days of the diploma are quickly passing by.

I am, Sirs, yours faithfully,

Brighton, June 20th, 1903. FREDK. W. COLLINGWOOD.

MOLYNEUX'S PROBLEM.

To the Editors of THE LANCET.

SIRS,—Dr. A. M. Ramsay's report of the case of a Man Blind from Congenital Cataract who Acquired Sight after an Operation when he was 30 years of age, given in THE LANCET of May 16th, p. 1364, is of extreme interest to students of psychology. There is one point on which further explanation would be welcomed. Dr. Ramsay says: "When asked to distinguish between a ball and a toy

brick he looked at them for a considerable time ..... and then he described both correctly." It cannot be meant that he said: "This is a sphere and that is a rectangular parallelopiped," or something equivalent. Even with normal eyes and lifelong experience it is not possible to see a sphere as a sphere or a cube as a cube. Molyneux, in stating his famous problem, supposed, as I understand him, that the patient was told that one of the bodies shown him was a cube and the other a sphere and was only asked to say which was the cube and which was the sphere. Was it in this way that Dr. Ramsay's patient was tested? Even Dr. Franz's patient, whose case is so carefully reported in the Philosophical Transactions for 1841, does not seem to have been tested in this way, although we may perhaps conjecture what the result would have been from the fact that he said he saw the cube as a quadrangular figure and the ball as a disc. If Dr. Ramsay's patient was simply asked to say which was the ball and which was the brick this would, I believe, be the first case in which Molyneux's problem was tried as he stated it.

I am, Sirs, yours faithfully,

Trinity College, Dublin, June 22nd, 1903. T. K ABBOTT.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Legacies to Local Charities.

Mr. Thomas Best, the survivor of two brothers who had for many years carried on a successful manufacturing business in this city, has bequeathed his entire fortune, amounting to over £100,000, to various charitable objects. The destination of about half this sum was decided by the will, the other half being left in trust to the Lord Mayor and corporation, in order that they may invest it and apply the annual income for the purposes of institutions in Birmingham and the Midland counties supported, at least in part, by public subscriptions. The specified moiety goes to various institutions in the city, the more important bequests to hospitals being £5000 each to the General Hospital and the General Dispensary, £4000 each to the Blind and Deaf and Dumb Institutions, £3000 to the Queen's Hospital, £2000 each to the Children's, Women's, and Orthopædic Hospitals, and £1000 each to the Eye and Ear and Throat Hospitals. Mr. Best was no doubt justified in trusting the disposition of one half of his fortune to the discretion of others, but that such a method of dealing with one's worldly goods may sometimes be a doubtful policy is illustrated by another series of gifts which have recently been made public. Dr. Griffiths of Washwood Heath, who recently died, had been for many years a well-known and much respected general practitioner in the eastern division of the city and one of the members of the corporation. Instead of deciding for himself as to the objects to which his money should be devoted he left the disposition of it to trustees. It must be confessed that it is difficult to suppose that the late medical gentleman would have approved of some of the objects to which his money has been devoted by those in whose hands he placed its distribution. It seems unlikely that he would have selected the Homœopathic Hospital as the recipient of £200, nor, considering the feelings entertained towards the General Dispensary by general practitioners, can one suppose that he would have selected that institution as one which should benefit by his generosity to the tune of £100. Finally, a similar sum given to the University is to be applied to the purchase of books for the department of English literature, though the medical school has many crying necessities, towards the satisfaction of which a gift of such a sum would have been very acceptable. The way in which this money has been distributed will perhaps give pause to medical men contemplating a similar method of disposing of their wealth after their death.

Medical Benevolent Society.

The eighty-first annual meeting of this society was held on May 29th, when Mr. M. A. Messiter of Dudley was elected President and Dr. E. Malins President-elect. It was announced that the invested funds of the society amounted to £15,688 4s. 6d., that there were 414 members on the books, and that a sum of £659 had been expended during the year in grants and Christmas donations. To the sum mentioned above will have to be added an amount of £5000, less legacy duty, which has been left to the society by the late Mr. Henry Duncalfe of Sutton Coldfield, subject to certain life interests. When it comes into the possession of the society this sum of money is to be invested and called "the Duncalfe Benevolent Fund."

Hospital Saturday Fund.

Saturday, June 13th, was the day set aside for the annual collection for this fund. The full amount has not yet been received but it will obviously be larger than in any previous year. As on former occasions Alderman Cook, the chairman of the executive committee, entertained the members of that body to tea after the conclusion of their labours for the day. In the speech which he made on that occasion the alderman congratulated the committee on the fact that the prospects of raising the £20,000 which they desired were very bright. No less a sum than £278,855 had been received from the citizens in connexion with the fund during the last 30 years—a truly wonderful record. He desired to see the time when it would be possible to establish a sanatorium for consumptives under the auspices of the fund. Such an institution was greatly needed and when its establishment was possible he was confident that the Hospital Saturday executive would be able to carry on the work as well as any other body in Birmingham. The Lord Mayor in his speech strongly supported the suggestion that such a sanatorium should be started for the use of the working classes of the city.

Crippled Children.

A conference on the subject of the welfare of crippled children has just been held at the Women's Settlement in this city. It was presided over by Miss Dale, one of the members of the education committee of the city, and there were present representatives of nearly all the organisations in the country for the care of crippled children. Before the reading of papers most of the delegates visited the special school maintained by the education committee for this class of children and were shown the ambulance which conveys the scholars from their homes to the school which is situated in Dean-street. In a paper by Miss Fisher of the Manchester University Settlement it was stated that the actual number of cripples in the country was not known, but that Mr. Knipe, honorary secretary of the National Industrial Home for Crippled Boys, estimated the number in 1888 as 100,000. In Birmingham there were 537 crippled children known to the union. Dr. F. Warner estimated that three in every 1000 of the children attending public elementary schools in London were maimed, crippled, or deformed. Accurate figures about those who were unable to attend school were unobtainable. As to the nature of the disablement, more than half of the cases were due to hip, spine, and other bone diseases; infantile paralysis came next, and then rickets, amputations, and deformity. In many cases a slight injury was aggravated by carelessness and neglect or by a mistaken kindness which prevented parents from taking their crippled children to a hospital.

Deaf and Dumb Institution.

The annual meeting of the friends of this charity has recently been held under the presidency of the Lord Mayor. There had been no recurrence of the epidemic of scarlet fever which had visited the institution in the previous year. The committee had again found it necessary to appropriate £500 from the legacy fund towards meeting the year's deficiency of ordinary income, which amounted to over £1000.

Hospital for Women.

A sum of £320 has been handed over to the committee of this hospital by the Master Bakers and Millers' Association as the result of a football match and sports held in May last in the grounds of the Aston Villa Football Club. At the annual meeting of the committee responsible for the church parade and service held each year for the benefit of the Women's Hospital by the Sparbrook and District Amalgamated Friendly Societies the chairman mentioned that last year £260 were raised for the hospital and expressed the hope that this year the contribution would not be less than £300. Councillor Nettlefold said that in designing the new hospital the committee started with a high ideal because it felt that if it did not aim at the moon it would hit nothing worth having. Whilst it would strive for one of the best hospitals of its kind in the United Kingdom the committee did not intend it to be a building replete with all sorts of fads and fancies. Only a few days ago its policy of inquiring before adopting anything had led to the explosion of the merits of a much-lauded, so-called germ-proof floor. He also stated that it was reported at a

meeting of the hospital committee that £29,325 had been raised towards the £30,000 which it had determined to raise before starting upon the work of the building. The new hospital would, however, cost £40,000, and he wished that the committee could have collected the entire sum before commencing operations.

Queen Victoria Nursing Institution, Wolverhampton.

The annual report of this charity shows that the present staff consists of 30 fully trained medical and surgical nurses, who have during the year attended 255 cases under 92 medical men. During the year 91 operations have been performed and altogether 107 patients have been admitted—an increase of 50 on the previous year. Increased accommodation has been provided at the institution by the addition of another room. A resident assistant to the lady superintendent has been appointed on account of the great increase in the work of this official. The district home has been removed to Waterloo-road, South, but regret is expressed that the appeal for increased subscriptions for this part of the work has not met with an adequate response. The statement of accounts shows that, including the balance in hand, the receipts have amounted to £2346, including £1273 as fees for nursing. The balance in hand amounts to £263. The report with regard to the District Nurses' Home shows that 1074 cases were attended during the past year and that the nurses paid 21,681 visits.

June 23rd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Late Dr. J. B. Nevins.

THE late Dr. Nevins, who died on June 10th, at the venerable age of 84 years, was one of the most estimable citizens of Liverpool and had been for many years a leader of intellectual thought in the city. His literary achievements were of the highest order. His habits of life conduced to his acquiring knowledge. He was a busy worker all his life. He was twice president of the Literary and Philosophical Society of Liverpool, firstly from 1869–72 and secondly from 1894–96. He was elected president of the Liverpool Medical Institution in 1886, an office which he filled with credit for two years. He took an enthusiastic interest in all public questions and there were few benevolent or philanthropic institutions in the city with which he was not associated. Up to a recent period he was to be seen almost daily in the streets, his brisk walk and alert manner showing few traces of his great age. An attack of influenza, aggravated by a weak heart, compelled him to take to bed a few weeks ago, and he gradually succumbed. His funeral, which took place on June 13th, was attended by a large concourse of citizens of all shades of opinion, including members of philanthropic, literary, and scientific societies, the medical profession being largely represented.

Royal Institute of Public Health, Liverpool Congress.

The arrangements for the meetings of the Royal Institute of Public Health are now nearly complete. The large hall at St. George's Hall will be open daily for the purpose of issuing tickets, &c., to members desirous of attending the Congress. The Congress will be opened on July 15th by an address by the President (the Earl of Derby, K.G.) in the small concert room at St. George's Hall. The presentation of the Harben medals for the years 1901 and 1902 to Sir Charles A. Cameron, C.B., and Dr. W. R. Smith, will then be made. Delegates and members are requested to wear municipal or academic robes. The sections will include child study and school health, also domestic sanitation and engineering, &c. The meetings of these sections will take place at the University College. At the adjournment of the proceedings of the housing section a visit will be paid to Port Sunlight for the purpose of inspecting the model village and works there; Mr. W. H. Lever, the proprietor, will kindly provide a luncheon for the visitors. Among the various entertainments provided will be a *soirée* at the Walker Art Gallery, a garden party at the private residence of the Lord Mayor of Liverpool, a cruise on the Mersey, excursions to Chester, to Eaton Hall, to Llandudno, and to the Menai Straits, and a visit to the Delamere Forest Sanatorium. The congress dinner will take place on July 20th, to which ladies are invited. Dr. E. W. Hope is the honorary general secretary and Dr. A. A. Mussen is the assistant secretary.

The Anatomical Society of Great Britain and Ireland.

The annual summer meeting of this society took place on June 19th and 20th at University College, Mr. C. B. Lockwood (London) presiding. Amongst those present were Principal Sir William Turner, K.C.B. (Edinburgh), Sir W. M. Banks (Liverpool), Professor D. J. Cunningham (Edinburgh), Professor H. Young (Manchester), Professor G. D. Thane (London), Professor J. Symington (Belfast), and Professor A. Robinson. Professor Robinson contributed an interesting paper on the Development of the Cranial Form in Man. He described experiments showing that the form of the skull was closely associated with the size and leverage of the lower jaw. Professor Symington gave a demonstration on the Relation of the Deeper Parts of the Brain to its Surface. The annual dinner of the society took place at the Adelphi Hotel on the evening of June 19th, when some 40 members were present.

Continued Abatement of the Small-pox Epidemic in Liverpool.

29 new cases of small-pox were notified to the health authorities during the week ending June 18th, which showed a marked decrease on previous weeks. There were 165 cases in hospital at the same date, as compared with 198 on June 4th and 335 on March 19th, showing a decrease of 50 per cent. in the number of cases in hospital at the end of the quarter.

Lectures on Tropical Ophthalmology.

Major H. Herbert, I.M.S., professor of ophthalmic medicine and surgery, Grant Medical College, Bombay, delivered two lectures to the students of the Liverpool School of Tropical Medicine in the lecture-room of the Thompson-Yates Laboratory on June 18th and 19th on Some Special Points in Tropical Ophthalmology. The lectures were highly interesting and were much appreciated by a large audience.

Birkenhead Children's Hospital.

The High Sheriff of Cheshire, Mr. T. B. Royden, opened the new wing recently added to the Birkenhead and Wirral Children's Hospital on June 12th, in the presence of a company which included the Bishop of Chester, the Bishop of Shrewsbury, the Mayor and Mayoress of Birkenhead (Dr. and Mrs. R. Owen Morris), and others. The chairman of the hospital (Mr. J. Elliot) sketched the growth of the hospital since its foundation 35 years ago, and paid a high tribute to Dr. P. M. Braidwood, the originator of the movement. The new wing is a three-storey building, embracing, on the ground floor, a spacious out-patient department and a room for the shelter of perambulators; on the first floor there are five bedrooms, a dining-room, bath-room, &c.; and on the second floor five more bedrooms, &c. This accommodation is for the nursing staff who have hitherto been much cramped in the main building through want of space. The building and furniture have cost £3360, of which £650 have yet to be found. Last year the hospital admitted 540 patients, and there were 6234 out-patients.

June 23rd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

University of Wales.

Dr. Andrew Francis Dixon, who has been during the past six years professor of anatomy and dean of the faculty of medicine at University College, Cardiff, has been elected to the chair of anatomy, Trinity College, Dublin, in succession to Professor D. J. Cunningham. The Cardiff School of Medicine loses a most capable administrator through the resignation of Professor Dixon.—Mr. K. J. V. Orton, M.A., F.C.S., assistant lecturer on chemistry at St. Bartholomew's Hospital Medical School, has been appointed professor of chemistry to the Bangor College of the University of Wales.

Appointment of Colliery Surgeon at Maerdy.

The final ballot of the men working at the Maerdy collieries in the Rhondda valleys for the election of a surgeon to succeed the late Dr. Benjamin Griffiths has resulted in the appointment of Dr. S. Glanville Morris of Nantgaredig.

Carmarthenshire. With one exception all the colliery surgeons in the Rhondda valleys are paid 3*d.* in the pound, this amount being deducted from the workmen's wages and handed to the surgeon directly from the colliery offices. An attempt was made by some of the Maerdy men to abandon this method in favour of one in which the surgeon would be paid a fixed salary, but a very large majority preferred to continue the poundage system.

Nickel Carbonyl Poisoning.

Reference has been made in THE LANCET[1] to the two deaths from nickel carbonyl poisoning which occurred in December last at the Mond nickel works, Clydach, near Swansea. The death is now reported of a third workman, 27 years of age, who had been employed at the works only about three weeks. The symptoms in this case were similar to those in the other fatal cases. Sir Lauder Brunton, Dr. J. Rose Bradford, and Dr. F. W. Tunnicliffe were associated with the surgeon to the works (Dr. John Jones) in treating the patient and in making investigations as to the cause of death.

Farm Colonies for Tramps.

There is an increasing feeling among boards of guardians that the solution of the tramp question is to be found in the provision of farm colonies to which habitual tramps could be sent. At the meeting of the Bristol board held on June 19th a definite motion was proposed inviting the coöperation of other boards in the West of England in establishing a farm colony. The discussion upon the motion brought out many of the difficulties attending the question, the principal one being the lack of power to detain a tramp within the colony. Although the motion was ultimately withdrawn there is no doubt that the consideration of the subject is of the greatest service, for the central authority will be compelled before long to take some steps to provide a remedy for a condition of things which is becoming a most serious matter for those concerned with the administration of the Poor-law Acts

Death of Mr. Daniel Davies-Jones, M.D., C.M. Edin.

Through the death from pneumonia on June 15th, at the comparatively early age of 44 years, of Dr. Daniel Davies-Jones of Mountain Ash, the district has lost one of its most esteemed practitioners. For nearly ten years he had been surgeon to the Powell-Dyffryn and to Nixon's collieries, during which time he had acquired the entire confidence and the respect of the workmen. He associated himself very closely with the Sunday-school work connected with the Welsh Calvinistic Church and he took a great deal of interest in other public work. He leaves a widow and two young children.

A Herefordshire Isolation Hospital.

The Hereford rural district council has decided to erect an isolation hospital with accommodation for eight patients on land purchased from the governors of Guy's Hospital, London. Tenders for the erection of the buildings have been accepted in the sum of £1875. The entire cost of the institution is to be paid out of current rates. The council has received very considerate treatment from the governors of Guy's Hospital who own about 40 farmsteads and some 10,000 acres in Herefordshire.

The Health of Carnarvonshire.

In his recently issued annual report Dr. Peter Fraser, the medical officer of health to the Carnarvonshire combined sanitary districts, urges very strongly the provision of adequate hospital accommodation for the treatment of persons suffering from small-pox. A general scheme to serve all the 25 districts in the combination was prepared and submitted to the authorities during the summer of 1902 but it was not found possible to obtain an agreement between them, the Llandudno urban district council alone, in accordance with its progressive character, erecting a small iron hospital for the use of its own town. As most of the inhabitants of the districts concerned depend almost entirely for their livelihood upon holiday visitors it is a little difficult to understand the reluctance of the district councils to follow the advice of their medical officer of health. They can hardly realise that a case of small-pox compulsorily kept in a lodging-house might ruin not only the particular lodging-house keeper, but all those living in the same street and in all probability a large number in the same town.

June 23rd.

[1] THE LANCET, Jan. 24th, 1903, p. 268.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Medical Association.

THE annual meeting of the Irish Medical Association was held in the town hall, Enniskillen, on June 17th, when there was a very large attendance of members from all parts of Ireland. The outgoing President, Dr. J. J. Cranny (Dublin), occupied the chair and was accorded a hearty vote of thanks, on the motion of Dr. R J. Kinkead (Galway), seconded by Dr. G. I. Mackesy (Waterford). During his year of office 23 new branches have been established, a fact indicating great progress. The new President, Dr. Leonard Kidd, then took the chair and delivered his inaugural address. He said that the Irish Medical Association was entering upon a new phase of a struggle from which it was its determination to emerge victorious. The association was now a defence association in the fullest interpretation of the term and it might justly congratulate itself on a greatly increased membership under a pledge of mutual support as follows:—

> I promise not to oppose any practitioner in any course of action he may take with the concurrence of the council in his official capacity concerning any appointment he may hold either to improve his position or resist additional burden to or new conditions of his duties and not to take an appointment vacant by the discharge or resignation of a practitioner under above circumstances, and not to seek any appointment under the Irish Poor-law service the remuneration for which is less than the amount considered equitable by the council.

The principal business of the meeting was to arrive at some decision with regard to the four chief disabilities under which Poor-law medical officers laboured. These demands were—(1) increased remuneration; (2) superannuation as a right; (3) annual leave as a right with payment of locum tenent; and (4) the adoption of some scheme for promotion in the Poor-law medical service. Experience had shown that the Poor law medical service could never be improved until the authorities were forced to act as the War Office was in the case of the Royal Army Medical Corps. Every legitimate effort must be made to prevent the men entering the Poor-law medical service. From this time forth no member of the association, of which almost half the entire profession in Ireland were members, could accept Poor-law appointments unless the rate of remuneration were brought up to the standard suggested by the council—a standard to be definitely fixed by the meeting. Towards non-members of the association their conduct must be absolutely constitutional. The association would not countenance illegal or unconstitutional acts. Its object should be to force upon the authorities an inquiry into these matters in the hope of having the Poor-law medical service turned into a State civil service and also to secure public sympathy by being moderate in its demands and by taking care that however much its members complained of, and objected to, the conditions of the service the sick poor should be treated with consideration. At any inquiry into the dispensary system reference was certain to be made to the returns made in relation to tickets and it was therefore very important that for the future medical officers should insist on having a ticket, red or black as the case might be, for their dispensary patients. The fight being now entered upon could not be carried on without ample funds and he was anxious during his term of office to establish a voluntary guarantee fund so that no deserving case would be left without assistance and that nothing would be left undone that ought to be done to achieve their ends, and he would start it himself with £5. Such a fund, to which the poorer members might not see their way to subscribe, would give the wealthy a chance of showing their *esprit de corps* and the earnestness of their protestations against the rottenness of the Poor-law service and would show that behind their annual subscriptions they had large latent resources. Dr. Kidd was loudly applauded at the conclusion of his interesting address.—Dr. H. H. MacDonnell (Dundalk) proposed:—

> That the minimum salary for dispensaries be £200, for workhouses £120, or for both combined £300.

This was seconded by Dr. S. Agnew (Lurgan) and was passed. The following motions were also adopted:—

Proposed by Dr. MacDonnell and seconded by Dr. C. Kelly:—

> That medical officers in the Poor-law service be entitled as a matter of right to superannuation on the Civil Service scale.

Proposed by Mr. S. B. Coates (Belfast) and seconded by Mr. J. W. Olpherts (Downpatrick) :—

That all medical officers in the Poor-law service be entitled to four weeks' annual vacation and that the payment of the locum-tenents be as provided for by Section 5 in the Local Government Amendment Act, 1902.

Proposed by Dr. T. Donnelly (Dublin) and seconded by Mr. Olpherts :—

That the minimum fees for discharge of temporary duty be: Dispensaries, £4 4s. per week; workhouse, £3 3s.; both combined, £5 5s. per week; periods less than a week, £1 1s. per day.

Proposed by Dr. H. T. A. Warnock (Donegal) and seconded by Mr. Olpherts :—

That it be an instruction to the Council to take the necessary steps to have such alteration of the law as will enable the Treasury to pay one-half of the amount of any increase of salary granted by boards of guardians and sanctioned by the Local Government Board.

A vote of thanks was passed to the President. Luncheon was served in the Assembly Rooms and Mrs. Kidd entertained a large number of members of the profession at Fermanagh County Infirmary, while the annual dinner which was well attended took place in the town hall, the President occupying the chair.

The New Royal Victoria Hospital, Belfast.

In the prospect of the King's visit on July 27th to open the new hospital in Belfast work is being rapidly pushed on and it is expected that everything will be ready at that date. The chairman of the construction committee (the Right Hon. W. J. Pirrie, D.L.) and Miss Pirrie have issued invitations to the subscribers to an "at-home" on July 2nd at the hospital to inspect the buildings and the wards. The hospital is being visited by many American visitors and they express themselves in terms of great admiration of the originality and thorough efficiency observable in every detail of its construction.

Royal Victoria Hospital, Belfast.

At a meeting of the corporation of the Royal Victoria Hospital, held on June 22nd, the old by-laws were repealed and in their place the new ones which had been most carefully considered were passed. The main points of change in reference to the medical staff are that the qualifications are slightly raised and that all members are to retire at the age of 65 years. The privileges of subscribers are carefully stated and a donor of £500 will have the right of giving a name in perpetuity to a bed, while a donor of £10,000 will have the right to name a ward in perpetuity. Already there are nine donors of £10,000, the last being Lady Harland.

Killarney Lunatic Asylum.

At the weekly meeting of the board of the Killarney Lunatic Asylum, held on June 20th, Mr. L. T. Griffin, resident medical superintendent, submitted his annual report in which he stated that the daily average number of patients was 585, an increase of 12 compared with the previous year. The gross expenditure was £15,130 6*s.* 3*d.*, but deducting receipts for paying patients and the amount of repayment of a loan the net cost of each patient was £21 19*s.* 1*d.*, which was less than that of the previous year. The governors of the Richmond Asylum forwarded the following resolution :—

That we promote a conference of representatives of the committees of district asylums in Ireland to consider the question of the increase of insanity, the management of the insane, and the readjustment of the Government aid, and that a committee be appointed to draw up a scheme.

It was decided to coöperate with the governors of the Richmond Asylum in the matter.

June 23rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Human Actinomycosis in France and other Countries.

DURING the past year 30 cases of actinomycosis in human beings were reported in France, so that the disease is not so rare as is generally supposed. M. Poncet and M. Trevenot have seen 11 cases of the disease and its localisation was very varied, for it showed itself in the rectum, in the appendix, in the lungs, and in the cervico-facial region. M. Poncet read a paper on the subject at the meeting of the Academy of Medicine which was held on June 9th. M. Trevenot and himself had noted that within the last five years 86 cases had occurred in France, 101 in Germany, 102 in America, 35 in England, 79 in Austria, and 189 in Russia. For the other European countries the figures were much lower. In relation to the extent of her territory France has an average as high as those countries where actinomycosis is more frequent. The gravity of the complaint varies according to the place where it shows itself in the body. The cervico-facial form is the most amenable to treatment. Actinomycosis of the thoracic or abdominal walls is more serious, visceral affections are still more grave as regards prognosis, and finally the pulmonary form is often fatal. Actinomycosis is undoubtedly in some cases transmitted directly from animals to man but in the majority of cases its origin is from the vegetable kingdom. The more poorly a man lives the more likely is he to be infected. The disease is more common in the country than in towns and more especially in those countries which are given up to growing cereals and fodder. The most successful treatment is iodine in some form, either applied locally or in the form of iodides, together with scraping and cauterisation. Actinomycosis should always be thought of in cases of suppuration and the pus should be histologically examined, for this is the sole method of forming a diagnosis and so of arriving at a rational method of treatment.

The Pasteur Monument at Chartres.

On June 7th the Pasteur monument at Chartres was unveiled by a committee, the members of which comprised representatives of most of the scientific and agricultural societies of the department. The monument consists of a bust of Pasteur standing on a pedestal ornamented with a semicircular bas-relief representing experiments on anthrax in sheep, experiments which Pasteur carried out in the neighbourhood of Chartres. The monument is due to the initiative of Dr. Paul Richer, a member of the Academy of Medicine, Professor of Anatomy at the Ecole des Beaux Arts, and formerly a pupil and colleague of Charcot. Every official person in the department of Eure-et-Loir was present, as also were many medical men and veterinary surgeons from the country round. Various orations were pronounced and a congratulatory telegram was received from the Bulgarian Government. The festival closed with a grand banquet.

The Treatment of Cancer by the X Rays.

At the meeting of the Academy of Medicine held on June 9th M. Albert Robin communicated a paper by M. Doumer and M. Lemoine of Lille dealing with the above subject. The first case was that of a man, aged 64 years, who presented all the signs of cancer of the stomach. A tumour could easily be felt in the region of the greater curvature. The tumour and all the symptoms disappeared after five exposures to the x rays. The second case was that of a woman suffering from a tumour of the stomach, together with progressive wasting and hæmatemesis. Sittings with exposure to the rays were begun on April 20th and by May 15th the tumour had disappeared. Similar success was met with in a third case. In many other cases only functional amelioration was obtained and in yet other cases the treatment failed completely. It has also been found possible to arrest in this way recurrent mammary cancer the diagnosis of which had been histologically confirmed. Although the rapidity of the cure of these cases of alleged cancer of the stomach makes the diagnosis doubtful, yet the position of the authors of the paper renders it impossible to reject the results without the very strictest inquiries.

Appendicitis as a Complication of Cholecystitis.

At the meeting of the Academy of Medicine held on June 16th M. Dieulafoy related two cases which had come under his personal observation in which patients suffered simultaneously from cholecystitis and appendicitis. The first case was that of a woman, aged 78 years, who began her illness with cholecystitis and in whom after a few days symptoms of appendicitis supervened. An operation was performed and both the gall-bladder and the appendix were found to contain pus. The patient recovered. The second case was that of a man, aged 30 years, who had marked symptoms of appendicitis. M. Segond, who operated, extended his incision upwards and found the gall-bladder distended with pus. This patient also recovered. M. Dieulafoy referred further to a case reported by an American surgeon named Grant, in which suppurative cholecystitis was diagnosed and in which within a very short time the patient exhibited signs of acute appendicitis. From a consideration of this case, of

those which he has personally observed, and of 24 other cases which he has found recorded, M. Dieulafoy has come to the following conclusions: Nearly all the patients had a history of some biliary trouble. Sometimes this fact deceived the medical attendant and made him overlook the appendicitis for a certain length of time. It is difficult to say to what this association of diseases is due. It has but little to do with calculi, for very often no calculi are found in the appendix or in the gall-bladder. It is not an ascending infection, as M Dieulafoy demonstrated by anatomical plates, but is most probably a descending infection starting from the gall-bladder. But once the appendix is infected the cholecystitis is masked by the acuteness of the appendicitis. Diagnosis must be made quickly, for the double operation necessary admits of no delay.

June 23rd.

Obituary.

ALFRED HAVILAND, M.R.C.S. ENG.

ON May 30th there died at his residence, "Ridgemount," near Frimley Green, Alfred Haviland, M.R.C.S. Eng., so well known to the medical profession for his work upon medical geography. He was in the seventy-eighth year of his age, having been born in Bridgwater in 1825, his father being Mr. James Haviland, M.R.C.S., J.P., a well-known and old-established medical practitioner of that city. Alfred Haviland was educated at the Hackney Church of England School and at University College Hospital and upon qualifying in 1845 he became partner in practice with his father. In 1849 he had the charge of his native town at the time of the epidemic of Asiatic cholera of that year and during this time he took meteorological observations day and night and noted the following coincident facts: (1) Whenever well-established "calms" prevailed over the infected area there was at once an increase in the number of fresh cases of cholera; and (2) on the other hand, whenever the air was disturbed by equatorial currents from south to west, blowing strongly, the number of fresh cases from cholera was immediately reduced. At the request of his friend the late Mr. G. J. Symons, F.R.S., he joined the corps of observers formed when Schönbein first made known in England his discovery how to detect ozone in the atmosphere by means of white blotting-paper saturated with a solution of iodide of potassium and starch and was much interested in finding that during "calms" the slip of paper indicated that there was no ozone in the air but that much was present during windy weather. In 1855, with a view to bring before his brother medical practitioners an epitome of the observations of Hippocrates, he published his first work on "Climate, Weather, and Disease." In 1864 the late Dr. Farr's first decennial supplement to the Registrar-General's twenty-fifth annual report formed the basis of the first edition of Mr. Haviland's work on the "Geographical Distribution of Disease." In 1868 he published a pamphlet entitled "Hurried to Death," calling attention to the folly of hurrying to catch trains and giving the results of his investigations as to the geographical distribution of heart disease which he had undertaken to test the soundness of the prevailing opinion that the new mode of travelling by railway was the cause of the supposed increase of that cause of death. On consulting Dr. Farr's first supplement to the Registrar-General's twenty-fifth annual report for the ten years 1851-60, he tabulated the death-rates so as to enable him to devote a chapter to the geographical distribution of heart disease in England and Wales in which he foreshadowed the results which he first published in a paper read before the Medical Society of London. He next mapped out the 630 registration districts of England and Wales in colours, which work was very greatly facilitated by the kindness of the late Major Graham, the then Registrar-General, the late Dr. Farr, and Captain William Clode. On Nov. 30th, 1868, Mr. Haviland read his first paper on the Geographical Distribution of Cancer among Females throughout England and Wales during the decennial period 1851-60 before the Medical Society of London under the presidency of the late Sir Benjamin Ward Richardson. In 1875 the "Geographical Distribution of Heart Disease and Dropsy, Cancer in Females, and Phthisis in Females in England and Wales, illustrated by coloured maps of heart disease, cancer, and phthisis," by Mr. Haviland was published. In 1879 he read a paper entitled the "Distribution of Disease Popularly Considered" before the Society of Arts for which he received the society's silver medal. From 1880 to 1890 Mr. Haviland visited Brighton, Scarborough, and the Isle of Man and published pamphlets on these places as health resorts. In 1891 he read a paper on the Influence of Clays and Limestones on Medical Geography, illustrated by the Geographical Distribution of Cancer among Females in England and Wales, before the Hygienic Congress. Mr. Haviland was led to take up the studies by which his name is best known owing to an accident in an operation, whereby he poisoned his finger and very nearly lost his life. He had to resign his practice in Somersetshire and it was during his convalescence and inforced inactivity that he made the first map of the distribution of rheumatism and heart disease with graduated colours of red and blue himself, eventually having others printed off from it, and very soon followed other maps of "cancer" and "phthisis" on the same lines. From very early in his life Mr. Haviland made the geography and causes of disease his study and he read everything connected with the subject up to the last, taking the greatest interest in the work. Before having to give up active professional work he was surgeon on the honorary medical staff of the Bridgwater Infirmary, honorary lecturer at St. Thomas's Hospital Medical School on the Geographical Distribution of Disease, and medical officer of health of the Northampton combined districts.

HENRY JAMES MOXON, B.A. DUB., L.D.S. R.C.S. ENG., AND R.C.S. IREL.

THE death on June 3rd, after an operation for appendicitis, of Mr. Henry James Moxon of 11, Buckingham Palace-road and Brighton, has removed the first dentist appointed to a Poor-law institution—viz., to the North Surrey District Schools, Anerley—which post he held for 19 years. He also was dental surgeon to the following schools—viz., Feltham Industrial, Anerley, Croydon Union Schools and Infirmary, Poplar Training Schools (Forest Gate), and Mayford Union (near Woking), and the numbers of children under his care at these schools were respectively 300, 980, 200, 900, and 200. He was also formerly dentist to Westminster Union Schools, Wandsworth Common. He had a wide conception of the scope of his profession in which he took much interest. He was the author of "Notes on Dissecting" and the contributor of "Temperature in Health and Disease," published in the *Hospital Gazette*, 1876, and of "Lecture on the Teeth" published in the *British Journal of Dental Science*, 1887. The funeral took place at Abney Park Cemetery on June 8th among many manifestations of sorrow and sympathy from his personal friends, including his brother Freemasons and from the institutions with which he was connected. He leaves a widow, son, and daughter to mourn their loss.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen having passed the necessary examination and conformed to the by-laws have been admitted Fellows of the College in order of seniority as Members:—

Herbert Willoughby Lyle, M.D. and B.S. Lond., L.R.C.P. Lond., King's College Hospital (Member, July 27th, 1893); Edwin Arthur Peters, M.D., B.C. Camb., L.R.C.P. Lond., Guy's and St. Bartholomew's Hospitals (Member, Nov. 8th, 1894); Wilfred George Mumford, M.B. Lond., L.R.C.P. Lond., Guy's Hospital (Member, May 9th, 1895); Francis Edward Freemantle, M.B., B.Ch. Oxon., L.R.C.P. Lond., Oxford University and Guy's Hospital (Member, Nov. 11th, 1897); Herbert Stanley Jenkins, M.B. Lond., L.R.C.P. Lond., University College, Bristol, King's College and London Hospitals (Member, August 2nd, 1898); George Augustus Roberts, L.R.C.P. Lond., King's College Hospital (Member, August 2nd, 1898); Arthur Martin-Leake, V.C., L.R.C.P. Lond., University College Hospital (Member, Nov. 10th, 1898); Robert Fletcher Moorshead, M.B., B.S. Lond., L.R.C.P. Lond., University College, Bristol, and St. Bartholomew's Hospital (Member, May 11th, 1899); Burton Alexander Nicol, L.R.C.P. Lond., D.P.H. Camb., Charing Cross Hospital (Member, May 11th, 1899); Ernest Lewis Lilley, M.B., B.S. Lond., L.R.C.P. Lond., Charing Cross Hospital (Member, July 27th, 1899); Charles Wynn Wirgman, M.B., B.S. Lond., L.R.C.P. Lond., University College Hospital (Member, July 27th, 1899); Harold Collinson, M.B., B.S. Lond., L.R.C.P. Lond., Yorkshire College and General Infirmary, Leeds

(Member, Nov 2nd, 1899); Richard Robert Cruise, L.R.C.P. Lond., St. Mary's Hospital (Member, July 25th, 1900); William Gough, B.Sc., M.B., B.S. Lond., L.R.C.P. Lond., Yorkshire College and General Infirmary, Leeds (Member, July 25th, 1900); Percy William Leopold Camps, M.B., B.S. Lond., L.R.C.P. Lond., Guy's Hospital (Member, Nov. 8th, 1900); William Stewart Dickie, L.R.C.P. Lond., Royal Infirmary, Glasgow (Member, Nov. 8th, 1900); Edmund Henderson Hunt, M.B., B.Ch. Oxon., L.R.C.P. Lond., Oxford University and St. Bartholomew's Hospital (Member, Nov. 8th, 1900); Robert Jaques, L.R.C.P. Lond., University College, Liverpool, and King's College Hospital (Member, Nov. 8th, 1900); Evelyn Davison Telford, M.A., B.C. Camb., L.R.C.P. Lond., Cambridge University and Owens College, Manchester (Member, Nov. 8th, 1900); Norman Maclaren, B.C. Camb., L.R.C.P. Lond., St. Bartholomew's Hospital (Member, Feb. 7th, 1901); John Atkins, M.B. Lond., L.R.C.P. Lond., Guy's Hospital (Member, May 9th, 1901); Frank Everitt Murray, M.B., B.C. Camb., L.R.C.P. Lond., St. Bartholomew's Hospital (Member, May 9th, 1901); Allan Johnston Fairlie-Clarke, M.B., B.C. Camb., L.R.C.P. Lond., St. Bartholomew's Hospital (Member, August 1st, 1901); Bertrand Seymour Jones, L.R.C.P. Lond., St. Thomas's Hospital (Member, Nov. 14th, 1901); Arthur Gentry Pitts, L.R.C.P. Lond., Charing Cross Hospital (Member, Nov. 14th, 1901); Israel Stusser, L.R.C.P. Lond., London Hospital (Member, Nov. 14th, 1901); Paul Norman Blake Odgers, B.A. Oxon., L.R.C.P. Lond., Guy's Hospital (Member, Feb. 13th, 1902); Frederick William Marlow, M.D., C.M. Trin. Coll. Toronto, L.R.C.P. Lond., Trinity Medical College and University, Toronto (Member, May 8th, 1902); Henry Harper Formby, M.B., B.S. Melbourne, L.R.C.P. Lond., Adelaide and Melbourne Universities, and London Hospital (Member, May 14th, 1903); Russell John Howard, M.B., B.S. Lond., London Hospital (not a Member).

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—C. E. Adams (Sections I. and II.), Guy's Hospital; W. E. Denniston (Sections I. and II.), St. Thomas's Hospital; H. B. Drake (Section II.), St. George's Hospital; A. H. Falkner (Section I.), Cambridge and St. Mary's Hospital; W. P. Jones (Section II.), Sheffield and University College Hospital; W. Lovell (Sections I. and II.), and W. A. Sugden, St. Mary's Hospital; and S. H. R. Welch (Section I.), Charing Cross Hospital.

Medicine.—W. E. Denniston (Section II.), St. Thomas's Hospital; H. B. Drake (Section II.), St. George's Hospital; N. S. Finzi (Sections I. and II.), University College Hospital; W. P. Jones (Section II.), Sheffield and University College Hospital; and A. Wharton (Sections I. and II.), Manchester.

Forensic Medicine.—T. E. Amyot and W. M. Emmerson, Durham; N. S. Finzi, University College Hospital; W. P. Jones, Sheffield and University College Hospital; and A. Wharton, Manchester.

Midwifery.—U. M. Aspien, King's College Hospital; J. M. S. Duncan, London Hospital; A. H. Falkner, Cambridge and St. Mary's Hospital; L. W. Roberts, Middlesex Hospital; and A. Wharton, Manchester.

The diploma of the society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—W. E. Denniston, H. B. Drake, W. M. Emmerson, N. S. Finzi, W. P. Jones, and W. A. Sugden.

UNIVERSITY OF CAMBRIDGE.—At examinations for medical and surgical degrees, Easter term, the following candidates were successful:—

FIRST EXAMINATION.

Part I. Chemistry and Physics.—D. Allan, St. John's; A. C. Anderson, Downing; F. R. Armitage, Pembroke; E. W. Atkinson and C. C. H. Binns, Caius; R. D. D. D. Brownson, St. John's; H. T. H. Butt, Christ's; F. G. Caley, Pembroke; W. H. Cam, Caius; R. N. Chopra, Downing; C. N. Coad, St. John's; T. A. B. Cockseige, Caius; K. Comyn, H. Selwyn; R. Cox, Caius; A. H. Crook, Christ's; A. E. Cullen, St. John's; J. P. H. Davies and A. P. Denby, Jesus; E. G. Fisher and A. J. S. Fuller, B.A., Emmanuel; F. J. Gordon, Christ's; J. L. Graham-Jones, B.A., Emmanuel; A. H. Habgood, Jesus; W. M. Jeffreys, B.A., Trinity; P. C. V. Jones, St. John's; R. Knowles, Downing; K. S. Koh, St. John's; E. M. Lauderdale, Caius; A. C. C. Lawrence, Trinity; H. Lee, St. John's; H. McLean, B.A., Caius; R. H. Mawhood, Trinity; E. W. Nelson, Christ's; W. Oats and H. Parsons, Caius; L. Powell, King's; R. F. Priestley, K. D. Pringle, A. C. Radford, and A. J. Rae, Caius; E. D. W. Reid, Christ's; E. L. N. Rhodes and W. F. Rhodes, H. Selwyn; R. P. M. Roberts, Queen's; F. A. Roper, Trinity; F. S. Scales, Jesus; H. E. S. Stiven, Trinity; T. S. Suan, Christ's; A. C. Tait, Sidney Sussex; R. B. Taylor, Clare; R. M. Vick, Jesus; G. B. Wainwright, B.A., Trinity; J. Walker and W. E. Wallis, Clare; V. T. P. Webster, Emmanuel; A. D. J. B. Williams, Caius; H. B. Wilson, Pembroke; W. B. Wood, Jesus; and A. E. Woolf, C. S. E. Wright, and J. F. W. Wyer, Emmanuel.

Part II. Elementary Biology.—D. Allan, St. John's; F. R. Armitage, Pembroke; M. W. Baker, St. John's; M. E. Balston, Trinity; C. C. H. Binns, Caius; D. C. Bluett, Emmanuel; W. Boys-Stones, Caius; R. D. D. D. Brownson, St. John's; H. T. H. Butt, Christ's; F. G. Caley, Pembroke; W. H. Cam, Caius; H. B. Carlyll, St. John's; A. E. A. Carver, Caius; R. G. Chase, Trinity; C. N. Coad, St. John's; K. Comyn, H. Selwyn; R. Cox, Caius; A. H. Crook, Christ's; A. E. Cullen, St. John's; B. Day, B.A., Caius; G. F. Drysdale, St. John's; H. B. Elton, Caius; L. A. Exham, H. Selwyn; A. J. S. Fuller, B.A., Emmanuel; P. St. J. B. Grigson, St. John's; J. D. Gunn, Pembroke; A. Hamilton, Christ's; H. A. Harris, B.A., Emmanuel; A. N. Hodges, Queen's; P. C. V. Jones, St. John's; J. E. S. Jones, Magdalene; K. S. Koh, St. John's; E. M. Lauderdale, Caius; H. Lee, St. John's; R. J. B. Leney, Caius; R. H. Mawhood, Trinity; E. Mellanby, Emmanuel; A. Morgan, Corpus Christi; P. Newton, Clare; E. E. Paget-Tomlinson, Trinity Hall; H. Parsons, Caius; F. N. Pethick, Trinity; L. Powell, King's; H. E. H. Pratt, B.A., Downing; R. F. Priestley and A. C. Radford, Caius; T. R. Rearden, Trinity; E. D. W. Reid, Christ's; W. F. Rhodes, H. Selwyn; R. P. M. Roberts, Queen's; F. A. Ropea, Trinity; E. S. Scales, Jesus; O. R. Smale Caius; H. E. S. Stiven, Trinity; T. A. Suan, Christ's; L. B. C. Trotter, Clare; R. P. Varwell, St. John's; P. J. Verrall and G. B. Wainwright, B.A., Trinity; J. Walker and W. E. Wallis, Clare; C. Whitaker, B.A., Emmanuel; A. D. J. B. Williams, A. J. Williams, R. Gregson Williams, and P. F. Wilson, Caius; and A. E. Woolf, C. S. E. Wright, and J. F. W. Wyer, Emmanuel.

SECOND EXAMINATION.

Human Anatomy and Physiology.—G. D. Alexander, B.A., Caius; F. O. Arnold, Trinity; A. L. Baly, B.A., Emmanuel; J. Barcroft, M.A., King's; G. B. Bartlett, B.A., Sidney Sussex; J. W. B. Bean, B.A., and W. T. Briscoe, B.A., H. Selwyn; D. W. A. Bull, B.A., and R. Burgess, B.A., Caius; C. Cassidy, Sidney Sussex; A. de C. C. Charles, Magdalene; H. J. Clarke, Trinity; F. J. Cleminson, B.A., and A. I. Cooke, B.A., Caius; W. D. Coplestone, B.A., Jesus; G. W. Craig, B.A., Emmanuel; N. R. Cunningham, B.A., Caius; R. Davies-Colley, B.A., Emmanuel; G. H. Davy, Caius; J. R. Draper, St. John's; A. C. D. Firth, B.A., Trinity; C. F. Fothergill, B.A., Emmanuel; N. H. Gandhi, B.A., Caius; H. J. Gauvain, B.A., St. John's; L. H. Goh, B.A., Emmanuel; W. B. Grandage, B.A., Clare; C. W. Greene, B.A., Emmanuel; M. Grundy, B.A., St. John's; J. E. Hailstone, M.A., H. Selwyn; O. Heath, B.A., Trinity; N. G. Horner, B.A., J. H. Iles, B.A., C. H. T. Hott, B.A., and T. A. Jones, B.A., Caius; J. L. Joyce, King's; A. A. H. Lawrence, B.A., Emmanuel; C. N. le Brocq, B.A., Pembroke; J. W. Linnell, B.A., and W. B. Marshall, B.A., St. John's; R. M. Miller, B.A., Clare; A. W. Moore, Emmanuel; H. W. Moxon, B.A., St. John's; G. W. de P. Nicholson, M.A., Jesus; H. F. G. Noyes, B.A., Caius; H. E. H. Oakeley, B.A., St. John's; G. G. Packe, B.A., Trinity; H. A. Pontifex, B.A., Pembroke; J. M. Postlethwaite, B.A., Emmanuel; C. H. Rippmann, B.A., King's; C. T. Scott, M.A., Sidney Sussex; P. H. Smith, B.A., Pembroke; W. H. R. Streatfeild, B.A., Queens'; C. Strickland, B.A., and F. B. Treves, B.A., Caius; B. Wahby, Non-Collegiate; A. Walker, B.A., Emmanuel; G. H. H. Wavley, B.A., King's; G. L. Webb, B.A., and P. C. West, Caius; E. G. Wheat, B.A., Christ's; E. Wight, B.A., Sidney Sussex; N. Wilson, B.A., Pembroke; L. Worrall, B.A., Christ's; and F. Worthington, B.A., St. John's.

THIRD EXAMINATION.

Part I. Pharmacology and General Pathology.—E. E. Atkins, B.A., Caius; J. R. Bentley, Emmanuel; G. T. Birks, B.A., King's; C. W. Bowle, B.A., Trinity; A. R. Bradley, M.A., Downing; A. D. Brunwin, B.A., Trinity; N. C. Carver, B.A., King's; S. Child, B.A., Pembroke; J. S. Cooper, M.A., Jesus; D. V. Cow, B.A., Trinity; G. E. Davidson, B.A., and W. F. L. Day, B.A., Caius; C. E. Droop, B.A., Trinity; A. H. Fardon, B.A., Christ's; S. Gooding, B.A., St. John's; R. E. G. Gray, B.A., Pembroke; J. M. P. Grell, B.A., H. Selwyn; P. Hardy, Trinity Hall; A. G. Harvey, B.A., St. John's; W. H. Hastings, B.A., and S. A. Henry, B.A., Trinity; W. H. Hills, B.A., Pembroke; T. G. M. Hine, M.A., King's; A. B. Hewitt, B.A., Clare; W. E. Hume, B.A., Pembroke; H. M. Illingworth, M.A., Clare; C. L. Isaac, B.A., St. John's; W. D. Keyworth, B.A., H. Selwyn; C. Lillingston, B.A., Pembroke; J. H. McAllum, M.A., Christ's; H. B. McCaskie, B.A., Caius; F. S. G. MacDonald, B.A., St. John's; J. McIntyre, B.A., King's; L. H. L. Mackenzie, B.A., Trinity; E. H. Mayhew, B.A., Emmanuel; R. C. Mott, M.A., Trinity; P. K. Muspratt, M.A., Christ's; B. H. Pain, B.A., Emmanuel; H. I. Pinches, B.A., Sidney Sussex; W. O. Pitt, B.A., Emmanuel; C. A. W. Pope, B.A., Trinity; R. Rees, Downing; H. J. Robinson, B.A., St. John's; H. C. Sidgwick, B.A., Clare; J. M. Smith, B.A., Christ's; A. T. Spanton, M.A., Trinity; S. J. Steward, Downing; B. N. Tebbs, M.A., Queen's; H. A. R. E. Unwin, B.A., H. Selwyn; J. A. Venning, B.A., Trinity; G. T. Western, B.A., Pembroke; W. P. Williams, B.A., Downing; J. L. Wood, B.A., Trinity; and R. Worthington, B.A., Clare.

The following degrees were conferred at the Congregation held on June 18th:—

M.D.—Hon. G. H. Scott, Trinity; R. F. C. Ward, St. John's; E. H. Symes Thompson, Christ's; and F. C. Eve, Emmanuel.

M.B. and B.C.—H. A. Gould, Trinity; F. Richmond, Clare; and L. Bousfield, Pembroke.

M.B. only.—A. G. Bate, King's; and J. E. Spicer, Trinity.

The Raymond Horton-Smith Prize is awarded to the Hon. G. H. Scott, Trinity, for his M.D. thesis entitled "A Contribution based on Clinical Observation to the Classification of the Various Cells found in the Blood in Health and Disease." The theses of Dr. D. G. Hall, Emmanuel, Dr. A. Croft Hill, Trinity, and Dr. G. C. Garratt, Trinity, are honourably mentioned.

TRINITY COLLEGE, DUBLIN.—At examinations held at Trinity term the following candidates were successful:—

Doctor of Medicine.—Final Examination: Section A.—John A. Pringle, Joseph W. Houston, John B. B. Whelan, Carlile Kelly, Edward G. Scroope, John W. Burns, Wilfrid Thunder, Thomas Creaser, Richard Kelly, Charles E. C. Williams, Robert A. Askins, Henry H. White, William F. Porter, and Hugh Stewart.

Diploma in Public Health.—Part I.: William F. Erskine, James H. Douglass, and Thomas W. G. Kelly. *Part II.:* Thomas G. Moorhead, George Raymond, Walter C. Oram, Robert G. H. Tate, Thomas W. G. Kelly, and Thomas F. Telford.

RESPONSIBILITY FOR MEDICAL FEES.—At the Penzance County-court held on June 16th Mr. John Alfred Fox, surgeon, of Penzance, sued a lady of Marazion for 18 guineas for medical services rendered at her request to a gentleman to whom she was engaged to be married and who was staying at her parents' house at the time of the illness. Evidence showed that the lady fetched the medical man and assured him that he would be paid for his attendance. The patient eventually died and Mr. Fox sent his

account to the father of the deceased man who made no reply and as the father of the defendant denied liability Mr. Fox was reluctantly compelled to sue the lady herself. His honour, Judge Grainger, in giving judgment, said the case raised an important question for medical men. Whilst agreeing that it was very hard on Mr. Fox he added that it would be dangerous for the court to hold that a person who merely fetched a medical practitioner to a patient could be made responsible for the fees chargeable for the medical attendance. Judgment was therefore given for the defendant with costs.

PRESENTATIONS TO MEDICAL PRACTITIONERS.—On June 12th Mr. C. Angus, M.B., C.M. Aberd., the medical superintendent of Aberdeen Royal Infirmary, was presented with a dessert service and a case of fruit knives and forks on his leaving to take up the duties of medical superintendent at Kingseat District Lunatic Asylum, the subscribers being the sisters, nurses, and servants connected with the institution.—At the meeting of the Sharpness branch of the St. John Ambulance Association, held at Fretherne Court by the invitation of Sir Lionel Darell, the members presented Mr. Walter Robert Awdry, M.B. Durh., M.R.C.S. Eng., with a case of silver-mounted and initialled pipes as a mark of appreciation of his services as honorary lecturer.

NATIONAL SOCIETY FOR THE EMPLOYMENT OF EPILEPTICS.—The tenth annual meeting of this society was held on June 15th at the offices of the society, 12, Buckingham-street, Strand. The chair was taken by Mr. E. Montefiore Nicholls and the reports of the honorary medical staff and the executive committee for the year 1902 were received and adopted. From the former report it appeared that four patients had recovered during the year, while many others had so far improved as to leave the society's colony at Chalfont in order to resume their occupations in outside life. The report of the executive committee shows the past year to have been one of great progress and extension, two new homes having been opened at the colony, while another (for 24 patients) which has been provided specially for the benefit of Hampshire cases, was commenced and is now nearly completed. The report, however, contains a list of further necessary works for which funds are urgently required, including an extension of the laundry, the erection of a dairy, a power house, and an administrative building, towards the cost of which a contribution of £3000 has already been promised.

LITERARY INTELLIGENCE.—We understand that in Mr. Charles Booth's final volume of "The Life and Labour of the People of London," which is on the point of being published by Messrs. Macmillan and Co., there will be a section dealing with hospitals, and a scheme will be outlined for fundamental changes as regards their management and their finances. The object, we are informed, is to secure the due coördination of every provision that is made for the sick and injured, accompanied by a more assured financial position. Another section of the volume will deal with the difficult problem of prostitution.—Messrs. Macmillan and Co. will shortly publish in their series for practitioners a work on "Modern Methods in the Surgery of Paralysis, with especial reference to Muscle-grafting, Tendon Transplantation, and Arthrodesis," by Mr. A. H. Tubby and Mr. Robert Jones. The volume will be illustrated by numerous figures and accounts of many cases which have been operated upon by the authors. So much good work has been done lately in this direction and the methods constitute so great an advance in the treatment of paralysis that it has been deemed advisable to bring the question succinctly before the profession.

METROPOLITAN PROVIDENT MEDICAL ASSOCIATION.—A meeting was held at 20, Portman-square, W., on June 19th to further the objects of this association. Mr. William Bousfield, the chairman of the association, presided. Its aim is to provide good medical treatment for the working classes on insurance principles and to relieve the overcrowded hospital out-patient departments by a system of coöperation. The chairman said that they had done a good deal but not so much as had been expected. With greater coöperation the provident system would expand and indiscriminate charity would pass away. The Mayor of Marylebone proposed the first motion which was passed to the effect that provident dispensaries upon the system carried out by the association should be formed in every district of the metropolis and that they should be worked in coöperation with the hospitals under rules generally approved by the medical profession. The Rev. Russell Wakefield mentioned that the association had 21 branches and over 30,000 members who contributed over £6000 a year to secure good medical treatment and medicine in time of sickness. Funds were required for the creation of new provident dispensaries and their maintenance until they attained self-support. The head office of the association is at 5, Lamb's Conduit-street, W.C.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, JUNE 18TH.

Physical Condition of Scottish School Children.

THIS subject was discussed in Committee of Supply on the Vote for Public Education in Scotland. Sir JOHN GORST called attention to the reports made by Dr. W. Leslie Mackenzie of the Scottish Local Government Board and Professor Matthew Hay of Aberdeen to the Royal Commission on Physical Training and recommended that not only should the teachers examine the children as to their physical condition but that periodically there should be examination by medical experts.—Dr. FARQUHARSON and other speakers supported this recommendation.—Mr. BRYCE asserted that the physical condition of school children in England was no better than in Scotland.—The LORD ADVOCATE, in reply, said that the Scottish Education Department had already written to several school boards asking them how far they could carry out the recommendations of the Royal Commission as to the feeding of children and along with the English Department it had appointed a skilled committee to advise on a model code of physical exercises. The Department was also considering the question of medical and sanitary inspection.

FRIDAY, JUNE 19TH.

Treatment of Epileptics.

The Bill promoted by Mr. Heywood Johnstone to enable defective and epileptic children to be cared for in the institution at Chalfont was read a third time at this sitting of the House. Several Members protested against the idea of these children being aggregated in a large institution of this kind.

Hanwell Poor-law Schools.

Mr. HERBERT SAMUEL asked the President of the Local Government Board whether he would refuse to sanction any proposal of the managers of the Hanwell Poor-law Schools to increase the certificate of that school by 387 beds by certifying the old ophthalmic block for the reception of normal children.—Mr. LONG replied: I have not received an application from the managers for an increase of the certified accommodation at these schools, but I was recently informed by them of a proposal to utilise some of the iron buildings until lately occupied by ophthalmic children. Before expressing an opinion on this proposal I asked for further particulars, and at the same time I pointed out to the managers that I should not be prepared to sanction an increase of the maximum number of children maintained at the schools.

MONDAY, JUNE 22ND.

Medical Examination of School Children.

Sir JOHN GORST asked the Secretary to the Board of Education whether the Board of Education would institute an examination into the physical and mental condition of samples of children taken from London schools, similar to that instituted in Edinburgh and Aberdeen by the Royal Commission on Physical Training (Scotland).—Sir WILLIAM ANSON replied: I have conferred with the President of the Board on the subject of the proposed examination. He and I are both fully sensible of the importance of such an inquiry; but the mode in which it should be conducted and the extent of the inquiry must be matters for consideration. I hope to be able to make a statement on the subject when the education estimates come on for discussion.

TUESDAY, JUNE 23RD.

Small-pox Epidemic in Staffordshire.

Mr. COGHILL asked the President of the Local Government Board whether he had any information as to the continuance of the small-pox epidemic in North Staffordshire and whether he could state if the Local Government Board was taking any steps to deal with it; whether there had been any, and if so how many, deaths from small-pox in the Potteries within the last ten days; whether the Local Government Board was satisfied with the hospital accommodation at present provided at the Bagnall Joint Hospital in the event of any further spreading of the epidemic; and whether he could state by how many different authorities this hospital was controlled.—Mr. LONG replied: According to returns received by me it appears that during the past 11 weeks 37 cases of small-pox have occurred in the Potteries. I am informed that there have been no deaths from small-pox in the district during the last 10 days. Except for a few cases at Hanley the epidemic seems practically to have ceased. The hospital referred to by my hon. friend is under the control of the North Staffordshire Joint Small-pox Hospital Board which represents 14 sanitary authorities. The Joint Hospital Board was only recently constituted and the accommodation provided by it for small-pox was intended to meet the emergency which then existed. It was not such as in ordinary circumstances I should approve.

WEDNESDAY, JUNE 24TH.

Small-pox Hospital Scheme at Nottingham.

Mr. JOHN ELLIS asked the President of the Local Government Board whether the inquiry promised by him on May 28th as to a small-pox hospital recently erected by the Town Council of Nottingham had been made and with what results in respect of the proximity of population thereto, both resident and working; and whether he had taken, or proposed to take, any further steps in the matter for the protection of those affected by the erection of this hospital.—Mr. LONG replied: One

of the medical inspectors of my department has visited his hospital and has made a report on the subject. It appears that although the population actually resident in the neighbourhood does not exceed the number which I should regard as permissible if it was proposed to raise a loan in connexion with the hospital, yet a considerable number of workmen are daily employed within half a mile of the site. I have written to the town council pointing out the objections to the site and urging it to endeavour to obtain another.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, 156, Charing Cross-road, W.C.
Walks in Rome. By Augustus J. C. Hare. Sixteenth Edition (revised), with plans, &c., by St. Clair Baddeley. In two volumes. Price 10s. 6d.

CASSELL AND COMPANY, Limited, London, Paris, New York, and Melbourne.
Tumours, Innocent and Malignant: their Clinical Characters and Appropriate Treatment. By J. Bland-Sutton, F.R.C.S. Eng., Surgeon to the Chelsea Hospital for Women. Third edition. Price 21s.

CHARLES GRIFFIN AND COMPANY, Limited, Exeter-street, Strand, W.C.
Foods: their Composition and Analysis. A Manual for the Use of Analytical Chemists and Others. By Alexander Wynter Blyth, M.R.C.S., F.I.C., F.C.S., &c. and Meredith Wynter Blyth, B.A. Cantab., B.Sc. Lond., F.I.C., F.C.S., &c. Fifth edition, thoroughly revised, enlarged, and re-written. Price 21s.

COLEGROVE, E. H., 65, Randolph-street, Chicago, Ill.
Arteria Uterina Ovarica. The Utero-ovarian Artery or the Genital Vascular Circle. By Byron Robinson, B.S., M.D. Chicago, Ill. Price $1.00.

DENTAL MANUFACTURING CO., Limited, 6 to 10, Lexington-street, Golden-square, W.
The Histology and Patho-Histology of the Teeth and Associated Parts. By Arthur Hopewell-Smith, L.R.C.P. Lond., M.R.C.S. Eng., L.D.S. Eng., Lecturer on Dental Anatomy and Physiology, Assistant Dental Surgeon and Demonstrator of Practical Dental Histology at the Royal Dental Hospital of London. Price not stated.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.
International Clinics. Volume I., Thirteenth Series, 1903. Price not stated.
Post-mortem Pathology. By Henry W. Cattell, A.M., M.D. Price not stated.

JONES, A. H., 24, Linnell-road, Camberwell, S.E.
The Rearing of the Infant: Advice to Mothers and Nurses on their Care and Treatment. By Robert Guy Kellett, L.R.C.P., L.R.C.S., Dublin. Price 6d. net.

JOHN BALE, SONS AND DANIELSSON, Limited, 83–89, Great Titchfield-street, W.
The Ocular Circulation. By J. HERBERT PARSONS, B.S., B.Sc., F.R.C.S., Arris and Gale Lecturer, R.C.S. (1903). Price 3s. net.

SMITH, ELDER, AND CO., 15, Waterloo-place, S.W.
Sir Henry Wentworth Acland, Bart., K.C.B., F.R.S., Regius Professor of Medicine in the University of Oxford. A Memoir. By J. B. Atlay, Late Scholar of Oriel College. Price 14s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

GILLIES, M. H., M.D. Toronto, has been appointed Clinical Assistant to the Chelsea Hospital for Women.

GUTHRIE, R. L., M.A., M.D. Edin., Barrister-at-law, has been appointed Deputy Coroner for the North-Eastern District of the County of London.

HARGREAVES, J. A., M.B., M.S. Aberd., has been appointed Medical Officer of Health of Wetherby, Yorks.

LORIMER, G., M.D. Edin., has been added to the Committee of Management of the Devonshire Hospital, Buxton, as *ex-officio* (Honorary Medical Officer), vice Dr. R. O. G. Bennett, J.P., deceased.

PARKER, HERBERT GEORGE, L.R.C.P., F.R.C.S. Edin., has been appointed Honorary Ophthalmic Surgeon to the Bolton Schools and Workshops for the Blind and Examiner for the St. John Ambulance Association.

RICHARDSON, CATHERINE MARY, M.B., Ch.B. Edin., has been appointed House Surgeon to the Derbyshire Hospital for Sick Children, Derby.

ROCHE, ANTONY, M.R.C.P., L.R.C.S. Irel., Professor of Public Health, Catholic University Medical School, has been appointed Lecturer on Public Health to Maynooth College.

RUDD, W. A., M.D. Durh., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Divisional Surgeon to Metropolitan Police at Acton, W., vice Dr. Lingham, deceased.

SERPELL, H. HAMILTON, M.R.C.S., L.R.C.P. Lond., has been appointed Assistant House Surgeon to the South Devon and East Cornwall Hospital at Plymouth.

SUNDERLAND, SEPTIMUS, M.D. Brux., M.R.C.P. Lond., has been appointed Obstetric Physician to the French Hospital, Shaftesbury-avenue.

TYLECOTE, F. E., M.B., Ch.B. Vict., has been appointed Casualty Officer and Anæsthetist at Ancoats Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD BOROUGH HOSPITAL.—Junior Male House Surgeon. Salary £80 per annum, with board and washing.

BRECKNOCK COUNTY AND BOROUGH INFIRMARY.—Resident House Surgeon, unmarried. Salary £120 per annum, with apartments, board, attendance, fire, and gas.

CARMARTHENSHIRE INFIRMARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, board, attendance, &c.

CHELSEA INFIRMARY, Cale-street, S.W.—Second Assistant Medical Officer. Salary £70 a year, with board, residence, &c.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Second House Physician for six months. Salary at rate of £30 per annum, with board, washing, and residence.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Honorary Medical Officer.

CROYDON ASYLUM AND MENTAL HOSPITAL.—Senior Assistant Medical Officer. Salary £200 per annum, rising to £250, with apartments, board, and washing.

DUBLIN, TRINITY COLLEGE.—Professor of Chemistry.

GUY'S HOSPITAL MEDICAL SCHOOL.—Gordon Lecturer in Experimental Pathology.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

JESSOP HOSPITAL FOR WOMEN, Sheffield.—House Surgeon, unmarried. Salary £75 per annum, with board, lodging, &c.

LIVERPOOL DISPENSARIES.—Assistant Surgeon, unmarried. Salary £100 per annum, with board and apartments.

LONDON COUNTY COUNCIL.—Visiting Dentist to Industrial Schools.

NEW HIGH LEVEL BRIDGE, Newcastle-on-Tyne.—Medical Officer. Salary about £200 a year, with board and lodging.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board, residence, and washing.

ROYAL ALBERT HOSPITAL, Devonport.—Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

ROYAL HOSPITAL FOR CHILDREN AND WOMEN, Waterloo Bridge-road, S.E.—Dispenser. Salary at rate of £104 per annum.

ROYAL VETERINARY COLLEGE.—Professor of Physiology and Histology. Also Professor of Chemistry at the College.

ST. MARY'S HOSPITAL FOR SICK CHILDREN, Plaistow, London, E.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, residence, and laundry.

SEAMEN'S HOSPITAL SOCIETY ("DREADNOUGHT"), Greenwich, S.E.—House Physician. Salary £65 per annum, with board, residence, and washing.

SOUTH WALES AND MONMOUTHSHIRE, UNIVERSITY COLLEGE OF.—Professor of Anatomy.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

TOTTENHAM HOSPITAL.—House Surgeon. Salary £90 per annum. Also House Physician. Salary £60 per annum. Also Casualty Officer. Salary £40 per annum. All for six months, and with board, residence, and laundry.

UNIVERSITY OF LONDON.—Academic Registrar. Initial salary £600; also Secretary to the University Extension Registrar. Salary £250, rising to £300.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Junior House Surgeon. Salary £50 per annum, with board, lodging, washing, and attendance.

WITHINGTON URBAN DISTRICT COUNCIL, BAGULEY SANATORIUM.—Resident Medical Officer. Salary £250 per annum, with board, residence, &c.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

SARJEANT.—On June 17th, at Parkhurst-road, Holloway, N., the wife of John F. Sarjeant, M.R.C.S., L.R.C.P. Lond., of a daughter.

WILSON.—On the 19th inst., at Denham House, Goldhawk-road, London, W., the wife of James Wilson, M.D., of a son.

MARRIAGE.

POOLE—ROBERTS.—On the 17th inst., at St. John's Church, Buxton, by the Rev. R. Granville Monckton, M.A., Arthur H. Poole, L.R.C.P. Edin., and M.O.H. Tottington, Bury, to Alice A., elder daughter of the late R. K. Roberts, Esq., and Mrs. Roberts, Tottington Hall, Bury.

DEATHS.

COWAN.—On June 20th, at The Lodge, Leigh, near Worcester, M. W. Cowan, Inspector-General of Hospitals, R.N., aged 72.

MANNING.—On June 18th, at Sydney, New South Wales, Frederick Norton Manning, M.D. St. And., aged 64.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DROUET INSTITUTE.

IN the issue of *Truth* of June 25th is a long indictment of the swindle which goes under the name of the Drouet Institute. As usual when our excellent contemporary considers that in the public cause an institution or a person should be exposed the exposure is made thoroughly and unsparingly, with detailed evidence in support of all assertions. *Truth* shows, and says, that M. Carré, the London manager of the Drouet Institute, is an inaccurate person. For more than three years our contemporary has been pointing out the harm which is done by the Drouet Institute, while we also have urged over and over again that some legal measures should be taken to check these and other pestilent quacks who prey upon the lives as well as the pockets of their victims. Such associations as the Drouet Institute, the British Vinol Company, and such unscrupulous charlatans as run "electrical invigorators" and cures for "nervous weakness," do incalculable harm and the responsibility which the proprietors of newspapers take upon themselves when they accept their advertisements is a very grave one. We congratulate *Truth* warmly upon the drastic exposure of the Drouet Institute and we hope that it will open the eyes of the public. When newspapers like the *Standard* and the *Daily Telegraph* take dirty money by inserting the advertisements of the Drouet Institute and its like it seems waste of breath to call less important journals to order.

A NEW SOURCE OF EARTHQUAKES.

To the Editors of THE LANCET.

SIRS,—We have all heard of "Pills against Earthquakes" but the arrangement of the sentences in the inclosed cutting from the *Exeter Gazette* seems to suggest a new connexion between our profession and these terrible visitations.

> "Lord Lansdowne has received through the British Ambassador at Constantinople a despatch from Vice-Consul Freeman giving details of the extent of damage done by the recent earthquake in the vilayet of Van, provided by Dr. Underwood, to whom the officials have expressed deep gratitude for his humane and valuable services."

But joking apart it is pleasant to read such ready official recognition of medical services.

I am, Sirs, yours faithfully,
June 18th, 1903. O. CLAYTON JONES.

"THE UNCROWNED KING," ETC.

AT Marlborough-street Police-court on June 21st Caleb Charles Whitefoord was charged, under the Medical Act, 1858, with wilfully and falsely pretending to be, or taking and using a title implying that he was, registered under the Act. The evidence showed that, besides other inscriptions relating to the sale of medicines, the defendant had displayed a plate bearing the inscription, "Dr. Whitefoord, Accoucheur," and proof was also given of the methods adopted when persons offered themselves as patients. The substance of the defence raised seems to have been that the fact of the defendant having been struck off the Medical Register was so well known that no one could have been deceived. The magistrate, however, convicted and inflicted a fine of £10 with £3 3*s.* costs. Mr. Whitefoord was referred to at some length in THE LANCET of March 21st, 1903, p. 849, under the heading "The Uncrowned King of the Appendicitis Pill." There is little to be added to what was then said except that attention may be drawn to an expression used by Mr. Schultess Young, the barrister who defended him. Mr. Young referred to his client as a "poor unfortunate old gentleman," describing him as one who had no intention of offending against the law. The principal misfortune of Mr. Whitefoord has consisted in his being convicted and sentenced to five years' penal servitude in July, 1891, for conspiring with another man (also convicted, a chemist who had recommended him to the patient) to procure criminal abortion. With regard to his more recent conduct reference may be made to the above mentioned article in THE LANCET. Mr. Whitefoord, so far from being the victim of misfortune, would appear to be precisely the sort of person against whom the public is entitled to protection—to such limited protection, that is to say, as the existing law is capable of supplying.

AN ALDERMAN AT FAULT.

AT Guildhall, before Alderman Sir James Ritchie, Peter Gorman, aged 55 years, a ship's fireman out of employment, giving an address at a lodging-house in Ratcliff-highway, was charged with stealing rags and other refuse valued at 1*d.* from a dust receptacle in Houndsditch. Mr. T. G. Vickery (City Solicitor's office) prosecuted on behalf of the Corporation, and said that these cases were brought before the courts entirely on sanitary grounds. People who raked over these dust-boxes were warned and when they paid no heed to it were given into custody. Formal evidence was given by a foreman of the City Street Cleansing Department but the prisoner denied having taken anything from the dust-box. Sir James Ritchie is then reported to have said, "What is the use of bringing such a charge? The value of the stuff cannot be a farthing. This is a trumpery case and I cannot convict." Mr. Vickery said that these cases were brought forward because Dr. W. Collingridge considered it necessary for sanitary reasons. Sir James Ritchie: "Sanitary mad!" adding, after discharging the prisoner, who promised not to go near the boxes again, "There are some boxes outside the City. Perhaps the authorities there will not prosecute you." Sir James Ritchie is gravely at fault in treating Gorman's action as a thing not worth public attention and in alluding to the opinion of the medical officer of health of the City of London in the matter as an instance of madness in the cause of sanitation. The scattering of refuse from such dust-boxes about the streets constitutes a danger to the public and the pecuniary worth of the refuse which Gorman extracted from them had nothing to do with the charge brought against him. Alderman Sir James Ritchie having fallen into this error, proceeded to accentuate it by actually recommending him to continue his dangerous and dirty conduct in other parts of the metropolis. We trust that if he follows the aldermanic hint he will be given in charge promptly and will find himself before an authority a little more able to appreciate the sanitary dangers of his conduct.

A WARNING.

To the Editors of THE LANCET.

SIRS,—I desire to warn members of the medical profession against a man named Spurgeon who has recently been calling on medical men in this district purporting to represent a society which he calls the "Medical Protective Association" of Temple Chambers, Temple-avenue, and also of Charing Cross-road, London. The object of this association, as stated in his printed prospectus, is for the collection of debts. He also gives a printed receipt for the subscription of one guinea. I find on inquiry that the association is not known at the addresses given and my letters have been returned through the Dead Letter Office. I am unfortunately a victim of this fraud.

I am, Sirs, yours faithfully,
Watford, Herts, June 23rd, 1903. SIDLEY I. LIGHTFOOT.

ANOTHER WARNING.

To the Editors of THE LANCET.

SIRS,—An individual, styling himself J. W. Longford, canvassing for books on commission, is calling on medical men in the Yorkshire district and stating that he is authorised to receive cash on my account for orders placed with him. I desire to warn those physicians and surgeons on whom he calls that he has no authority whatever, either to collect or to receive money on my behalf. As he has already victimised two or three members of the profession, I shall feel obliged if you will kindly insert this note of warning in your next issue.

I am, Sirs, yours faithfully,
Edinburgh, June 22nd, 1903. YOUNG J. PENTLAND.

"CHELTINE SOLUBLE MALTOSE FOOD."

IN our analytical notice of this preparation last week the figure for proteid was inadvertently omitted from the analysis. To the figures already reported should be added—proteid, 7·90 per cent.

B. H.—The latest paper upon the subject with which we are acquainted is one that appeared in THE LANCET of March 28th, p. 866, by Mr. F. Milton. The article in vol. ii. of Allbutt's "System of Medicine" may also be consulted or any one of the four or five most modern works on tropical diseases.

Materfamilias.—The advertisements are disgusting. Some serious attention will be paid in our columns shortly to the enormous increase of this class of advertisement and to its appearance in papers and magazines that are presumably respectable.

P. P.—No, certainly not.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 25th, 1903.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 a.m.
June 19	29·54	N.E.	...	59	51	48	48	51	Raining
,, 20	29·77	N.E.	1·07	64	53	47	48	50	Cloudy
,, 21	30·11	N.	...	97	61	48	49	53	Cloudy
,, 22	30·23	S.W.	...	100	65	48	52	56	Hazy
,, 23	30·18	S.	...	120	69	50	53	60	Fine
,, 24	29·97	E.	...	105	68	56	56	59	Overcast
,, 25	30·09	S.W.	...	112	66	54	55	56	Overcast

During the week marked copies of the following newspapers have been received: *Kidderminster Shuttle, Aberdeen Free Press, Aberdeen Free Press (Weekly), Buxton Advertiser, The Newbury Weekly, Boston Independent, Westminster Gazette, Hertfordshire Mercury, Literary Digest (New York), Windsor and Eton Express, Standard, Cardiff News, South Wales Daily News, East Anglian Daily Times, Walsall Advertiser, Surrey Advertiser, Coventry Herald, Birmingham Daily Mail, Reading Mercury, Mining Journal, Local Government Chronicle, East London Advertiser, Ipswich Times, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.) London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.).

WEDNESDAY (1st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.) Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (2nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat, (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (4th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex, (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (1st).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. R. Andrews, Lieut.-Col. Sturmer, and others. Short Communication:—Mr. H. J. Curtis (introduced by Dr. H. R. Spencer): Extirpation of Uterus and Vagina in a Child, aged Twelve Months, for "Grape-like" Sarcoma of the Cervix, Fungating into, and Infiltrating the Walls of the Vagina (with specimen). Discussion on Ophthalmia Neonatorum (opened by Dr. S. Stephenson, introduced by Dr. Griffith).

THURSDAY (2nd).—NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. General Meeting.

RÖNTGEN SOCIETY (20, Hanover-square, W.).—8.30 P.M. Annual General Meeting. Annual Report and Balance Sheet. Election of Officers for the ensuing Year.

FRIDAY (3rd).—WEST LONDON MEDICO-CHIRURGICAL SOCIETY (Society's Rooms, West London Hospital).—8.30 P.M. Address:—Mr. R. Lloyd (President): The Administration of Anæsthetics in Rectal Diseases. 9 P.M. Annual General Meeting. Presentation of Annual Report and Election of Officers for ensuing Session.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8 P.M. Card Specimens will be shown by Mr. W. C. Rockliffe, Mr. J. H. Parsons, and Dr. L. Buchanan. 8.30 P.M. Papers:—Dr. L. Buchanan: Keratitis, with Special Reference to the part played by the Corneal Cells.—Mr. W. H. H. Jessop: Cases of Proptosis.—Mr. C. W. Dean: Primary Papilloma of the Cornea.—Mr. S. Snell and Mr. E. T. Collins: Three Cases of Plexiform Neuroma of Temporal Region, Orbit, Eyelids, and Eyeball, with Histological Examination. 10 P.M. Annual General Meeting.

SATURDAY (4th).—PATHOLOGICAL SOCIETY OF LONDON (Pathological Laboratory, South Parks-road, Oxford).—4 P.M. to 6 P.M. Communications will be made by Dr. Beddard, Dr. Pembrey, Dr. Spriggs, Dr. Dreyer (Copenhagen), Dr. Haldane, Dr. Ritchie, and Dr. Muir.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (29th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. M. H. MacLeod: Clinique. (Skin.) 5.15 P.M. Mr. J. Hutchinson, jun.: Diseases of the Tongue.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Ball: Certain Symptoms of Throat, Nose, and Ear Disease.

TUESDAY (30th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. E. Squire: Clinique. (Medical.) 5.15 P.M. Mr. F. C. Wallis: Preparations, Methods, and After-treatment in Operations.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Ball: Certain Symptoms of Throat, Nose, and Ear Disease.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury).—3.30 P.M. Sir Victor Horsley: Surgery of the Nervous System.

WEDNESDAY (1st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Smith: Clinique. (Surgical.) 5.15 P.M. Mr. J. Berry: Hare-lip and Cleft-palate.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Some Diseases of the Nervous System.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Dr. Acland: On the Selection of Chest Cases for Operation.

THURSDAY (2nd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Mr. J. Hutchinson, jun.: Diseases of the Tongue.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Treatment of Some Injuries and Emergencies.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—4 P.M. Dr. T. D. Lister: Pathisis in Relation to Life Assurance. (Post-Graduate Course.)

CHARING CROSS HOSPITAL.—4 P.M. Dr. Galloway: Dermatological Cases. (Post-Graduate Course.)

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Dr. Still: Enuresis and Fæcal Incontinence.

GUY'S HOSPITAL MEDICAL SCHOOL.—UNIVERSITY OF LONDON (Physiological Theatre).—4 P.M. Dr. E. W. Ainley Walker: Recent Work upon the Nature of Immunity. (Gordon Lecture.)

FRIDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. R. Lake: Clinique. (Ear.) 5.15 P.M. Dr. A. Whitfield: Eczema.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Abraham: Cases of Skin Disease.

LONDON HOSPITAL MEDICAL COLLEGE (University of London) (New Clinical Theatre).—4 P.M. Mr. J. Hutchinson: Diseases in India—Scrofula and Tuberculosis in India.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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Communications, Letters, &c., have been received from—

A.—Anderson's College Medical School, Glasgow, Secretary of; Messrs. Armour and Co., Lond.; Mr. C. E. Addison, Colchester; Messrs. Allen and Hanburys, Lond.; Anatomical Society of Great Britain and Ireland, Lond., Hon. Secretary of; Messrs. R. A. Anderson and Co., Lond.

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L.—Dr. David Lawson, Nordrach-on-Dee; Leicester Infirmary, Secretary of; Dr. H. A. Lediard, Carlisle.

M.—Messrs. Maple and Co., Lond.; Medical Society of Victoria, Melbourne, Hon. Treasurer of; Maltine Manufacturing Co., Lond.; Manchester Medical Agency, Secretary of; Messrs. Macmillan and Co., Lond.; Messrs. A. Miller and Co., Belfast; Dr. E. P. McLoughlin, Lond.; Messrs. Moore and Co., Lond.; *The Mining Journal*, Lond.

N.—Mr. A. W. Nuthall, Birmingham; Mr. H. Needes, Lond., Mr. J. C. Needes, Lond.

O.—Dr. George Oliver, Harrogate.

P.—Lieutenant-Colonel F. F. Perry, Lahore, India; Parfumerie Lubin, Paris; Dr. Sidney Phillips, Lond.; Mr. Y. J. Pentland, Edinburgh; Dr. D. Noël Paton, Edinburgh; Dr. J. T. Price, Llanfachreth; Prideaux's Pure Casein and Life Food Co., Motcombe.

R.—Messrs. Rebman, Lond.; Royal tatistical Society, Lond., Secretary of; Dr. A. Raffray, Paris; Dr. Guthrie Rankin, Lond.; Royal Hospital for Women and Children, Secretary of.

S.—Dr. R. B. Sherlock, Lond.; Dr. Carl Scherk, Homburg v. d. H.; Society of Apothecaries of London, Secretary of; Seamen's Hospital Society, Lond., Secretary of; Southampton, Medical Officer of Health of; Miss E. Stowell, Georgetown, Ontario; Dr. C. N. Saldanha, Lond.; Septic Tank Co. (The), Lond.; Messrs. W. H. Smith and Son, Birmingham; Mr. M. Sestier, Lyons; Dr. H. Stedman, Lond.; Messrs. G. Street and Co., Lond.; Messrs. J. Smith and Co., Lond.; Strand Engraving Co., Lond.; Mr. Edmund D. Spear, Boston; Mr. S. G. Shattock, Lond.; Scholastic, Clerical, &c., Association, Lond.

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U.—University of London, Principal of.

W.—Dr. J. R. Wallace, Lond.; Dr. V. Wanostrocht, Beddgelert; Messrs. Willows, Francis, and Co., Lond.; West Bromwich District Hospital, Secretary of; Dr. S. Whiteford, Birmingham; Withington U. District Council, Clerk of; Mr. C. A. Wickham, Willesborough; West London Hospital, Post-Graduate College, Dean of; Dr. F. Parkes Weber, Lond; Mr. S. G. Watson, Brighton.

Letters, each with enclosure, are also acknowledged from—

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